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ARTICLE I.

THE ORGANS OF SENSATION AND MOTION DISCOVERED.

BY W. BYRD POWELL, M.D., of Covington, Ky.

MR EDITOR:—Believing that the discovery of the organs of sensation and motion, or the sensory and motory centres, will be interesting, if not useful, to the profession, I send for the EXAMINER a contribution on these subjects. Physiologists have long, if not always, spoken of the sensory and motory centres; but hitherto they have known nothing of their respective organs. Physiologists have conclusively arrived at the conviction that the faculties of sensation and motion are independent of each other. But are they primitive and independent faculties? I do not remember to have found this question answered—it has only, I believe, been assumed. I will now show that the affirmative is true. Dr. SPURZHIEM, high authority, presents it as a rule, that when a faculty is more strongly manifested by one sex than the other, or by one people or nation than another, it is primitive and independent. Men are more sensual, generally, than women. Men complain more than women under an exposure to cold, and under the inflictions of the surgeon's knife, than women do. The white variety, at least, of the Caucasian species of our genus is greatly more capable of suffering than is the American species; our Indians bear torture

with comparative impunity. From these facts, I infer that animal sensibility is a primitive and independent faculty.

Muscular motion.. As the males of all known species of animals are more muscular than the females, so I infer that this faculty is both primitive and independent.

Of the functions of the cerebellum nothing, I believe, was definitely known before the investigations of Dr. GALL. He discovered it to be the source of the "instinct of reproduction;" but this opinion has been ably but unsuccessfully controverted. Since the demise of this distinguished observer and physiologist, some French physiologists, for the purpose of disproving Dr. GALL'S conclusion in relation to the function of the cerebellum, obtained the cerebelli of stallions, geldings, and mares and weighed them. They found those of some mares and geldings to weigh more than those of some stallions. Dr. GALL did not teach that the "instinct of reproduction" was the exclusive function of the cerebellum, nor did he teach the contrary. He taught that animals having a large and broad cerebellum were the most successful procreators; but he never comprehended why it was so. He thus left the impression that the entire cerebellum was the organ of the "instinct of reproduction." But this conclusion does not necessarily follow; because other faculties may be essential to reproduction than the instinct of reproduction. The existence of the organs of other faculties in the cerebellum may explain the fact that some mares and geldings may have a larger cerebellum than some stallions; the sequel will show. These physiologists, if I mistake not, entertained the opinion that the coördination and regulation of muscular movements constituted the function of the cerebellum, a most preposterous opinion, certainly; in as much as these functions are purely intellectual. Is there any common sense in the idea that the muscular movements of the pianist, violinist, and engraver are the results of a blind instinct? Some other French physiologists taught that the cerebellum was the organ of sensation. The sequel will show that the cerebellum comprises the organs of sensation, motion, and the "instinct of reproduction."

As my observations in relation to sensation and motion were conducted *pari passu*, I find it more convenient to treat of them together. As the history of these discoveries is interesting, and shows how they were suggested, I will introduce it.

In 1837, during the vacation of the Medical College of Louisiana, New Orleans, I visited, as a phrenological teacher, the City of Claiborne, Ala., and in an hour or so after my arrival, Dr. JOHNSON, with four other gentlemen, called on me. The Dr. had with him a human skull, and as he approached me, he said, "Prof. Powell, I will bet you ten dollars you cannot indicate the character of the man representod by this skull, by an examination of it." As he was to me a stranger, and not being pleased with his introduction, I resolved to parry him. I rejoined, as I know I can, and you do not know that I can, the chances are all in my favor; and, therefore, Sir, I cannot, as an honest man, accept your proposition. He rejoined, "But I am willing to risk it." I rejoined, I think it very probable that you know but little of the science of phrenology, and still less of my ability in the application of it; therefore, your willingness to risk, under such circumstances, affords me no relief; consequently, I must decline the acceptance of your proposition.

At this moment, one of the other gentlemen said, "Professor, you will greatly oblige us by indicating the character of the man of whom that is the skull?" I responded, I will, Sir, if Dr. JOHNSON will make a memorandum of the leading peculiarities of his character, and the principal events of his history. The Dr. rejoined, "I will do it, Sir." He did it; and at my request he gave it to the gentleman who made the request that I should give my opinion of the man, to keep till I should have expressed my opinion. I took the skull and remarked thus:—The man represented by this skull was tall and slender; his hair and eyes were brown; his complexion dark, or in other words, his temperament was bilious encephalic. (The Dr. ejaculated, "I did not mention that in the memorandum; but, Sir, you are graphically correct.") In relation to his character, I have to say, that a more degraded specimen of our species can

scarcely be found in any civilized community than he must have been, for he observed none of the proprieties incidental to civil society. He was very cowardly; and equally negligent of all the duties incidental to humanity, in the social state; and yet he was respectably endowed with mechanical and mathematical abilities; but he was so irresponsible, and destitute of industrial energy, that they could have been of but little use to himself or any one else; but the governing proclivity of his nature was his sexual propensity, and it was so exceedingly importunate that I cannot believe that he was capable of restraining it within legal limits. I now said, I have concluded, gentlemen. The Dr. rejoined, "If you had accepted my proposition, I would now be minus ten dollars."

The memorandum was now handed to me, and it read thus: —"The man represented by the skull in question was known as Thomas Kennedy, a native of Annapolis, Md.; he was by trade a house carpenter, and esteemed a good one; he was also a practical surveyor; but he was so unreliable and worthless that he was but rarely employed to do anything; he was so cowardly that the boys bullied over him in the streets. At the age of 14 years, he attempted the violation of a girl 7 years old; at the age of 18 years, he attempted a similar outrage upon a girl 9 years old; at the age of 20 years, he married, and a day or so after, his wife arrested him in attempting a similar outrage upon her black maidservant, 8 years old; at the age of 24 years, his wife died, and he went to Virginia, and perpetrated a rape on a girl 10 years old; and for this crime he was hung —while standing on the drop, with the rope about his neck, he informed the spectators that such commerce with female children had been the governing passion of his life."

The Dr. and his friends thought that my delineation of the character of Kennedy was exceedingly accurate, but I was not satisfied; for I did not, and at the time could not, indicate the direction his sexual propensity had taken; and yet I could not doubt that his sexual propensity for female children had a physiological cause, and I desired a knowledge of it, and resolved, if possible, to discover it. His cerebellum was very

deep in its mesial position, the condition from which I inferred the importunate character of his amatory propensity,—the organs of which I had previously become fully assured by pathological evidence. Between the mastoid processes his cerebellum was very unusually contracted, and this condition I remembered to have seen in five other men who had perpetrated the same variety of crime, and of two of whom I had the crania, and the other three I saw in state's prisons. Such a uniformity of this condition induced me to suspect that with such men there was an organic defect.

I analyzed the reproductive function, and concluded that sensation and motion were as indispensable as desire; and as he had manifested motor power enough to take his neck to the gallows, and as deficient animal sensibility would, as I conceived, explain his desire for female children, so I thought it probable that his endowment of animal sensibility was greatly insufficient; and this I was inclined to attribute to the small development of the extreme lateral portions of his cerebellum.

Having concluded that the faculties of sensation and motion were primitive and independent; and also arrived at what I deemed a probability as to the nature of his condition; I was prepared to undertake the discovery of the organs of the two faculties above named, but more particularly that of sensation. In addition to the skull of Kennedy, and also those I had of other men, executed for the same variety of crime, the mastoid processes did not stand out boldly, as they do in most human crania; on the contrary, they were depressed, and so was the occipital bone adjoining them, respectively.

My first observation was made on my carriage horses, which were of about the same age, size, color, and keeping. I took them out of a close stable, on a cold and frosty morning, which caused a shivering of the entire surface of one of them, the other appeared as insensible to the atmospheric condition as if he had been dead; this difference arrested my attention, and I immediately examined and compared their heads. The mastoid processes of the sensitive horse stood out boldly from his head, and the adjacent portion of the occipital bone was full; the de-

developments of the other were precisely the reverse: his mastoids were depressed, and greatly concealed by the soft parts. The development of the two horses were as different as were their manifestations.

I now placed every human head that came into my presence under contribution, when propriety permitted. By this procedure it was but a month or two before I became satisfied that the extreme lateral portions of the cerebellum are the organs of animal sensibility, or, as I understand the subject, they constitute the nerve centre. When these organs are largely developed they cause the mastoid processes to project from the head, and a fulness of the occipital bone interiorly and posteriorly to them, respectively. In living subjects, the cervical muscles which are situated posteriorly to the mastoids, have a full or fleshy appearance when the organs are large. These organs, I infer, are always diseased or subjected to undue pressure in cases of hemiplegia of sensation.

A high development of these organs indicates a tendency of the body to grossness or fulness. Females who adopt the courtesan profession from inclination have a high development of these organs. Their high development is also the cause of nymphomania, I believe. Inveterate masturbators have those organs small, and so have those who have an intemperate desire for commerce with female children. I have the crania of three men, one black and two white, who were executed for rape on little girls, and I have seen several men in state's prisons for the same variety of crime, and all of them had these organs small, and the amatory organs large.

The faculty of muscular motion. In my analysis of the reproductive function, I found that, to males at least, muscular motion is as much a *sine qua non* in the reproductive function as the instinct of reproduction or sensation, and hence indispensable to the perpetuity of the species; and hence I inferred it to be probable that its organ would be found in the vicinity of those of sensation and of the reproductive instinct, to coöperate with them. Knowing my carriage horses to be exceeding dissimilar in relation to their muscular qualities—the sensitive

one never balked, and the other would do nothing else, except through fear of the whip, consequently, I again examined their heads, and found the former to be very fully developed, about midway between the mesial line and the respective mastoid processes, and the latter to be to an equal degree depressed at the corresponding localities. At this time, I was travelling, and made it a rule to halt every team I met, and learn of the teamster the quality of his respective horses, with reference to draught. By this course, I was, in a few days, able to distinguish, at the distance of several yards, a true from a balky horse,—the faithful horses were uniformly much developed between the mastoid processes and the mesial line. Having thus become familiar with the locality and development of the organs of motion in horses, I directed my attention to men, and in a month, I could distinguish, at sight of the occipital portion of the head and neck, the faithful laborer from the shirker.

These organs are situated midway between the mastoid processes, respectively, and the mesial line, and in proportion to their development, the base of the occipital bone will be downwardly developed, and when large the superior lateral portions of the neck are full and fleshy, and when they are small there is a correspondingly deep depression near the base of the occipital bone, between the mesial and laternal muscles of the neck; and this, I think, to be invariably the case with those who have a scrofulous diathesis. Horses having these organs large are not adapted to the saddle or pleasure carriages—their muscles are heavy and their motions are rough, but for draught they are best. (I will state incidentally, that the mesial third of the cerebellum constitutes the organs of the "instinct of reproduction" or amativeness. The verity of this statement I have had placed beyond any possible doubt by pathological conditions. In the preceding 25 years, I have been consulted by seven men who were, respectively, the subject of severe paroxysms of pain, brought on by excessive commerce with the other sex, with a consequent loss of the amatory propensity. It is proper to add that in these cases, respectively, the organs of sensation and motion were but little developed.) When a man complains

of constant soreness and of paroxysmally severe pain on either or both sides of the mesial line, between the occipital protruberance and the foramen magnum, it may be pretty safely inferred that his commerce with the other sex has been intemperate. I have known several stallions and bulls to have lost their ability to procreate, and they were, respectively, very feebly endowed with the organs of sensation and motion. Dr. GALL remarks, "I have always observed that animals having a large and broad cerebellum were the most successful procreators;" but he never comprehended the secret of it, because he knew nothing of the organs of sensation and motion. We can now understand how it may be the fact that a mare or gelding may have a larger cerebellum than a stallion. If the former have large organs of sensation and motion, with even small organs of amativeness, they would have a larger cerebellum than a stallion with large organs of amativeness and small organs of sensation and motion; hence the fact, that some French physiologists found some mares and geldings with a larger cerebellum than had some stallions, did not prove Dr. GALL's conclusion to be an error, that the instinct of reproduction was referable to the cerebellum.

I have labored much to ascertain the essential function of the motory organs, but am not sure that I have succeeded; my conclusion, however, is that they are generators of motor power, for those who are highly endowed with these organs are sustained in their muscular efforts, and readily recover from muscular fatigue.

The discovery of the organs of sensation and motion demonstrated. In a little time after becoming confident that I had discovered the organs of sensation and motion, I returned to New Orleans, and in a day or so after my arrival, my colleague, Prof. HARRISON, called on me and solicited my presence at a *post mortem* examination of the brain of a youth of about 17 years of age, who died in the Charity Hospital. When taken to the Hospital, a year before his death, he had hemiplegia of sensation of his right side; he was represented as being an inveterate onanist before his seizure of hemiplegia, of which he

did not recover; and three days before his death he was assailed with hemiplegia of motion of his left side. When the Professor had concluded the history of the case, I informed him that I had discovered the organs of sensation and also of motion; he rejoined, "This case may furnish some confirmation of your discoveries."

When we had removed the brain from the skull to a table, I turned it upside down, and indicated to the Professor the organ of sensation of the left side. The first incision by the scalpel disclosed about half a drachm of encysted pus; at the sight of which the Professor exclaimed, "Here is a demonstration of your discovery of the organ of sensation!" I now indicated to him the organ of motion of the right side of the brain, and after a search of a few seconds, he said, "And here is a demonstration of the organ of motion;" it was a tubercle as large as a garden green pea of a bluish-gray color and granulated structure.

It presented no indices of inflammation.

A pathological fact in relation to animal sensibility. About a year after making the preceding discoveries, I gave a course of phrenological lectures, in the city of Columbus, Miss., and Dr. M. ESTES was one of my class; a few weeks after the conclusion of my course, and I had left the city, I received from the Doctor the following letter:—

"PROF. POWELL,—I send you a fragment of information, which you will know how to appreciate. One of our citizens left the city, a few days since, on a spree, and after dissipating two or three days, he returned, and sent for me. I found him suffering extreme soreness and pain in a space about as large as a half-dollar, precisely where you locate your newly discovered organ of animal sensibility. The opposite side of his body is so sensitive that he cannot allow his bedclothing to touch it, and the extraction of a hair from the same side of his head gives him very severe pain. Yours, &c. M. ESTES."

A pathological fact in relation to the organ of motion. In '55, I was seized with hemiplegia of motion of my left side, and

three days subsequently the locality of the organ of motion of the right side of my cerebellum became very sore—not painful; two or three applications of galvanism removed the soreness, but under pressure it continued tender for five years. About a year after all tenderness left the part, even under pressure, a clairvoyant lady called on me, and as a drowning man will grab at a straw, so I requested her to take a peep into my brain, and inform me of its condition? She rose from her chair, walked round to my back, placed her finger on the organ, and said, "In there is a tubercule as large as a grain of black pepper, and of the color of gray limestone, the surface of it appears ragged; I think it is smaller than it has been; and you will again have the use of yourself."

I do not comprehend clairvoyance, but that some people have such a faculty, I have had too much evidence to doubt.

With a practical application of these discoveries, I have done. All writers on masturbation, whom I have consulted, treat of it as being an acquired vice, but this I am confident is an error. It is a physiological vice, the result of a malorganization. When it is acquired, it never becomes inveterate, and marriage is the most appropriate remedy; but when it results from an abnormal organization, marriage greatly aggravates it. To such men a woman is not only as useless, but as objectional as would be a fifth wheel to a wagon. This condition results from a high endowment of the mesial or amatory third of the cerebellum, and a feeble endowment of the organs of sensation. Those having also a feeble endowment of the motory organs, the vice may induce inflammation and suppuration in the amatory organs, and then follows demensia and death. These may be rare results of the vice, but they do obtain. This truly unfortunate organization, more frequently than otherwise, results from physiologically incompatible marriage; and hence this vice is usually associated with a scrofulous diathesis, and hence phthisis is not an unfrequent sequel of this vice. It has been taught by some, that this vice is a cause of phthisis. An exciting cause it may be, I admit, but not the remote.

I have visited, probably, a majority of the lunatic asylums of

our country, and found in many of them masturbators of both sexes. About 15 years ago, or a dozen years after making the preceding discoveries, I visited a lunatic asylum in one of the Southern States. The physician of the institution and myself had been fellow-students and graduates. He conducted me through the institution, and in our progress we entered a room in which were six male masturbators, with their hands bound behind them. I inquired of the physician the object of it? He answered, "To keep them from self-pollution." But do you expect by such treatment to restore them to society and usefulness? "No, Sir; but what else can be done? Their condition is not pathological, and hence they have no need of medicine." I rejoined, you are correct, Sir; their condition is physiological, and as physiology is a department of our profession, their condition is not beyond the resources of our profession. "What plan of treatment would you suggest?" Allow me to examine their heads, and I will respond. "Certainly, Sir; you can do so." I found all of them deficient in animal sensibility, and some of them in motor power. I explained to him my plan, thus:—procure a sufficient number of axes, wedges, and mauls; have a number of pretty large timber trees brought into the lot, minus the brush, and make these masturbators work them into convenient firewood; have them to begin their labor at daylight, and continue it till dark, and so closely too, as to make rest absolutely imperative; so that when they retire to their beds they will sleep instead of masturbating. By this labor their seminal glands will secrete less, and thus reduce their amatory irritation; the organs of sensation and motion will be more developed; and when by this labor the vicious habit is arrested, reduce their labor and provide them amusement, as music and dancing. By this plan, I am confident you may, in less than a year, restore them to their friends. This course will establish an equlibrium amongst the vital forces, which is a normal condition. This treatment will also remove the scrofulous diathesis from those of them who have it—and several of them have it.

He rejoined, "I fear your suggestion is impracticable with these youths—they are the sons of affluent planters, and they

would seriously object to their sons being made to labor." I interrogated, Is not your will the law of the institution? He responded, "It is." I rejoined, as these youths were sent here for treatment, and as it is your duty to restore them if you can; then, Sir, as I conceive, it is your duty to teach those planters that they must conform to the laws of the institution, or take their sons out of it. He rejoined, "Have you ever made a trial of this treatment?" Not thoroughly, but to an extent, on negroes, that satisfied me that it will succeed. "Your treatment favorably impresses me; and as it is both my duty and desire to restore all who are sent here, I will adopt your suggestion, and inform you of the result." He continued, "I have several female masturbators here; what can I do with them?" I answered, make them sweat over the wash-tub, or over the floors, in scrubbing them or in brushing them. "Their mothers would never stand it." If I were in your place they would have to stand it, or take them home. In two months, he informed me by letter, that he had restored to their friends two of the masturbators whom I saw, and had a flattering prospect of restoring them all.

I have seen, I think, ten women under treatment for nymphomania; with nine of them the organs of sensation were large, but in the tenth, they were small; she, I suspect, was a masturbator and not a nymphomaniac. In the nine the amatory organs were not large. These observations have caused me to depart from authority in relation to the precise character of this affection. It is not, I think, a maniacal desire for amatory relief, but a maniacal desire for the pleasure that sexual commerce affords them.

The faculties of sensation, motion, and amativeness I denominate the vital forces or faculties; and the abnormal development of their organs in relation to each other accounts for all the vices that obtain in the relation the respective sexes hold to each other, and very much of the abnormal condition of these organs results from the physiological incompatibility of progenitors. I saw in the New Orleans Hospital, a eunuch, the result of incompatible marriage. The individual had a penis, but

neither a beard nor testicles. The intellectual organs, those of the human sentiments and of sensation and motion, were respectably developed, but the mesial third of the cerebellum—the organs of the "instinct of reproduction" did not constitute a portion of the cerebellum. This individual was exclusively a neuter—had no instinct of sex, and could form no conception of it. I have the skull of this individual—it is a very remarkable illustration of human monstrosity.

A feeble development of the motory centre is, in my opinion, that condition which constitutes the scrofulous diathesis; and as I know the motory centre can be rapidly developed by exercise, consequently, I infer that judicious exercise in the open air, began in infancy, would save 75 per centum of those who otherwise would prematurely die of some scrofulous form of disease. The motory centre is, I doubt not, the source of involuntary respiration, and hence it is that a high endowment of this centre cannot coëxist with the scrofulous diathesis. Physiologists, I believe, regard the medulla oblongata as being the respiratory centre. But this conclusion requires some qualification; a high endowment of this centre is an indicator of the scrofulous diathesis. It is at the most, therefore, the source, only, of voluntary respiration.

ARTICLE II.

SINGULAR FREAK IN NATURE, OR MALFORMATION.

By D. O. CRIST, M.D., of Bloomington, Ill.

On the morning of the 27th of January, 1858, I was called to see Mrs. D., a lady of much respectability, in her first confinement. On entering the lady's chamber, seeing her mother leaving the bed, and Mrs. D. apparantly easy, I supposed at once that I had arrived too late, as the old ladies say. But a few moments stay convinced me that my conjecture was wrong. Although there was, as is generally the case in first confine-

ments, a cessation of the pains. But, however, in a proper time they returned; and I found them to be of that character so minutely described by CHURCHILL as the first stage of labor. Although her husband told me when he came that she had been suffering for fifteen hours, and was very bad. I found the pains quite regular, and to all appearance efficient. After proper time and observation, I proposed an examination per vaginum, which was acceeded to, though not without some fear on the part of the lady, as is generally the case in first confinements; but, however, by the assurance of the mother, they were soon removed, and I proceeded with the examination, and found that labor had commenced, and the parts were well lubricated and of proper temperature, and the dilatation of os uteri was good; and finding quite a large and roomy pelvis, I anticipated a speedy delivery, but found, on extending the examination, it proved to be a footling presentation. The membranes were not ruptured, nor did they protrude as they generally do in head or natural presentations. Being always cautious, in cases of that character, not to rupture the bag of waters, for fear that the feet may pass down, and the labor become more difficult by a prolapse of the cord. However, finding the labor not as far advanced as I expected previous to the examination, I excused myself for one hour; and not being able to get back by the time appointed, they had dispatched a messenger for me.

When I returned, I found the pains more efficient, and the membranes ruptured, and the child entering inferior strait; and in two hours' time she was delivered of a healthy but rather delicate female child. Finding the circulation in the funis active, I separated the child after ligating the cord twice, thinking from the appearance of abdomen and smallness of the child there must certainly be a second child. After the proper attention to the babe, I found, by taking hold of the cord, that it was scarcely long enough to extend externally to the vulva. But by making an examination, I found what I supposed to be another child, and it proving to be a footling also. After acquainting the grandmother (for such she was,) of the fact, of their being another child as I supposed, I then acquainted the

lady herself of the probability of her being a mother again soon, as there appeared to be another within the uterus; assuring her that all that was necessary for her welfare was for her to keep quiet, and I thought she would soon be delivered of a second child. However, the pains not coming on for some time, I ordered a decoction of secale cornuetum; thinking, in case of hemorrhage, that I would be prepared to meet the urgency of the case.

In the course of an hour from the time the first child was born the pains returned quite active, and in a few moments she was delivered of a second child, with the following singular and remarkable appearance:—

First in order comes the head, which was quite small in comparison to the body, not having any bones within, but covered tolerably well with hair, without the appearance of any eyes, but a small aperture for the mouth, or seemingly where it should be, this aperture extending down into the thoracic region. Not having opened the thorax, I cannot say if the lungs were well developed or not.

The neck was short, and almost as large in circumference as the head. The thorax was well developed in every respect, with the exception of arms, and there was not the least sign of arms, nor was there anything to correspond. The breasts or nipples were fully formed and quite prominent, much more so than natural.

The cord was rather singular, as many other parts of the child. As I said before, the cord was quite short, scarcely long enough to reach external to the vulva. But on coming to examine the cord and afterbirth, I found it quite singularly constructed. The cord from the well-formed child was one of the slender, short cords that we occasionally meet with, and joining as it were with the cord coming from the unnatural child, and terminating with but one placenta.

The cord from the unnatural child having quite a singular appearance: not being white and clear looking, as we generally find them, but rather a dark, grumous and apparantly of a gel-

atinous character; where it emerges from the child is rather higher up than it would be in ordinary children.

We now come to the nates, they having quite the appearance of an ordinary child. The anus appears to be natural; the generative organs are quite developed; and, as Artemus Ward says, we find it belonging to the female persuasion, with vagina and vulva, in fact, possessing all the paraphernalia that is generally accompanying that order.

The length of body, from nates to apex, was 5½ inches; the circumference of the body 13 inches; the thigh being 9 inches in circumference, and 3½ inches in length, containing one bone as it should.

At the joints it had the appearance as if there had been a string drawn tightly around, forming a crevice or stricture as it were.

The length of lower limb, from knee to heel, was 6 inches, and the circumference of the same 5 inches, and containing two bones as usual. The feet and toes were all natural and well-formed. But the child had quite a peculiar color, almost that of a red; but why it should be so I am somewhat at a loss to tell or decide, unless it was caused by the mother attending a ball. After dancing all night, she was taken unwell, and had quite a flow, so much so as to think she was going to miscarry; and perhaps the husband thinking it a time of frolic and revelry, he insisted on his rights as a husband, and she being of a kind turn and accommodating, yielded to his requests. The consequence was conception and cessation of the flow, and nature spliced on and remained till the time of gestation. Perhaps I should have said that the couple had only been married four weeks previous to the time of attending the dance. Hence the flow causing the peculiar color to the deformed child.

ARTICLE III.

AN EPIDEMIC OF ERYSIPELAS, CAUSED BY THE DECOMPOSITION OF ANIMAL MATTER IN CHICAGO RIVER.

By E. ANDREWS, M.D., Professor of Surgery in Chicago Medical College.

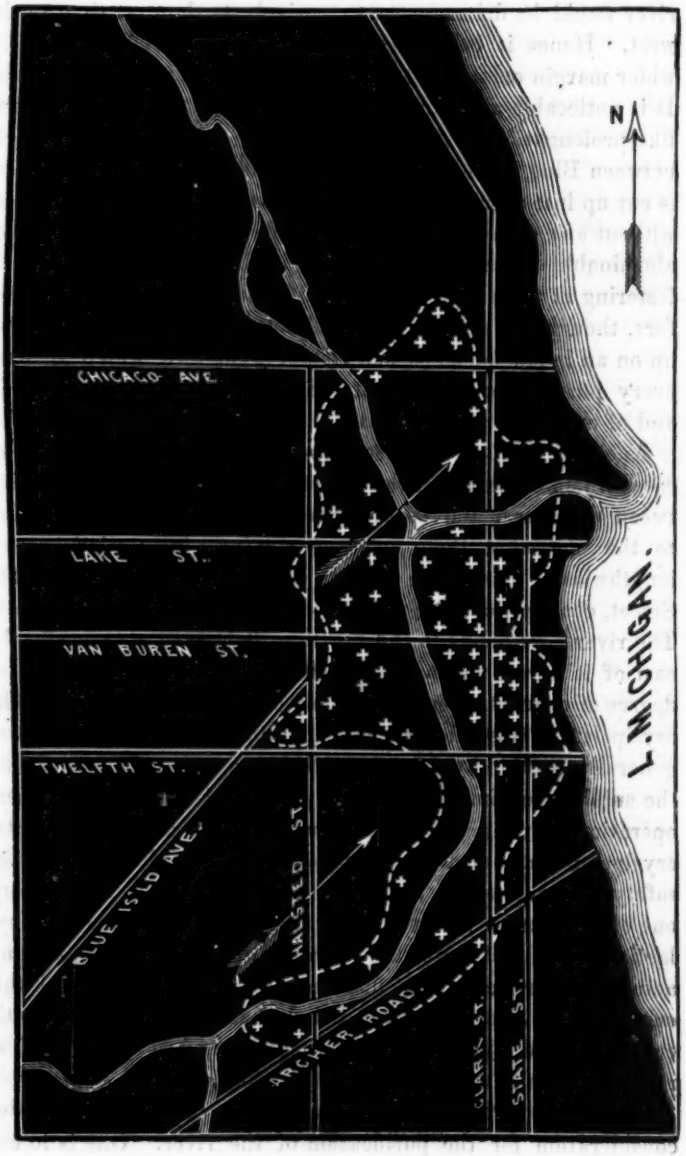
Chicago, like the city of London, has received a vast annoyance from the foul condition of its river; and the discussion as to what will be the best means of removing the evil is still on the tapis undecided. Chicago River, at ordinary times, has no proper current of its own. It is a mere inlet of Lake Michigan, receiving scarcely any water from inland sources, and having very little motion, except the slight flow inwards and outwards, caused by rise and fall of the lake, from changes of wind. By reference to the accompanying map it will be seen that it consists of a North and South Branch, each extending a few miles only, and uniting to form a short main river, three-quarters of a mile in length, terminating in the lake.

The river and its branches vary from 150 to 400 feet in width, and the depth is sufficient to float the largest lake vessels. Into this torpid stream, from the necessity of the case, nearly all the sewers of the city run, carrying the liquid filth from the streets, dwellings, sinks, manufactories, and slaughter houses of over 150,000 inhabitants. Along the South Branch in particular, there is a great number of packing houses, where many hundreds of thousands of animals are slaughtered every year, the filth and offal of which block up with a semi-fluid mass of putrefaction the sloughs and watercourses which empty into the river, while the more solid refuse materials are or were carried out and deposited in the fields beyond.

The rapid and enormous growth of the city gave to this evil such an unexpected magnitude that the sanitary precautions previously found sufficient, were now made utterly ineffective; and during the summer and autumn just passed, the condition and odor of the river became abominable beyond expression.

The stench could be perceived for miles in the direction of the wind; and the parts of the city nearest the stream were filled with the foul effluvium to an insupportable extent.

Now, there is nothing more thoroughly proved in the range of human knowledge than the fact, that foul air generates innumerable diseases. It is also a fact well known to physicians that one of the earliest effects of air, contaminated with putrifying matter, is the appearance of numerous cases of erysipelas among the persons exposed to its influence. In accordance with this general law of nature, the autumn of the past year showed a decided increase of sickness of such kinds as ordinarily scourge ill ventilated and filthy localities only, and that too in some of the best quarters of the city. Erysipelas in particular began to be very prevalent, and in the month of November, assumed the proportions of an epidemic. In order to decide the question of the influence of the river in this disease, I instituted inquiries among numerous physicians in all parts of the city, and obtained from them the localities of all the cases which had fallen under their care, during the months of October and November. The localities of all these cases amounting to 68 in all, are marked by white croses on the map, and the infected district thus determined is surrounded by a dotted line to show its form. The tract thus marked out contains only about one-third of the population of the city, yet it embraces almost every case of erysipelas that showed itself. The only apparent exceptions which I met were where persons were habitually doing business near the banks of the river and slept at a distance from it. Such persons would take the disease from the river air and then go home and be sick outside of the proper boundary of the epidemic, though they took the disease within it. A single glance at the map shows how thoroughly the epidemic clung to the vicinity of the river, and sufficiently demonstrates the cause of its inroads; but a few remarks may be needed to explain some peculiarities in the outline. The arrows mark the direction of the prevailing winds in this region. The current of air being more frequently from the Southwest than from any other quarter, it follows that the effluvium of the


N
CHICAGO AVE.
LAKE ST.
VAN BUREN ST.
TWELFTH ST.
BLUE ISL'D AVE.
HALSTED ST.
ARCHER ROAD
CLARK ST.
STATE ST.
L. MICHIGAN.

river would be driven more extensively to the east than to the west. Hence it is readily observable that the epidemic had a wider margin on the east of the river than on the opposite side. It is noticeable also that the infected region had a peninsula-like prolongation westward, in spite of the wind, into the angle between Blue Island Avenue and Twelfth Street. This region is cut up into a great number of narrow and very filthy streets, without any efficient drainage. The slops, and every kind of abominable excrement, accumulate in the open gutters, and lie festering in the alleys and yards. This part of the city, therefore, though not receiving the full benefit of the river air, gets up on an independent basis a stench of its own, which answers every purpose for the increase of medical practice in general, and of erysipelas in particular.

Another point of interest is the enormous preponderence of cases which occurred on the east side of the South Branch, between Van Buren and Twelfth Streets. This is doubtless owing to the fact, that the prevailing south-westerly winds sweep lengthwise of the South Branch from Bridgeport to Twelfth Street, coming for three miles along a line of unspeakable filth. The river here bends to the north-west, leaving a region to the east of it across which the putrid effluvia sweep in a greater degree of concentration than in any other part of the city. The erysipelas in this epidemic usually attacked the face, and was generally curable by free use of the muriated tr. of iron, or by the sulphites of lime and soda. I continued to perform surgical operations during the whole time, without any of the fatal erysipelatus complications common in such epidemics, and the safety of my patients I attribute to the fact, that I put every one of them upon the use of the tincture of iron, as a prophylactic, immediately after the operation, without waiting for any actual appearance of the disease. I have now followed this custom for several years, and I find that in this way traumatic erysipelas and pyæmia may be almost banished from surgical practice, even in very unfavorable periods.

The Board of Public Works have had various plans under consideration for the purification of the river. One is to cut

two canals from the lake, one to the head of the North and the other to the South Branch, and to throw in through these, by means of a wheel propelled by steam, a powerful current. In this way the water may be changed every twenty-four hours. Another plan is to cut the Illinois and Michigan Canal down to the level of the lake, and feed it by the river itself, thus drawing in pure water from the lake. The enormous and unexpected growth of the city, however, has taken everything by surprise; and before any plan could be executed, the evils of impurity were already upon us. At present, a temporary cure has been obtained by turning this way the waters of the Canal feeder, which create a current and keep the South Branch in a tolerably good condition. The kindly action of the frost too has covered the water with a thick stratum of ice, which is, for the winter, an effectual remedy. Next spring, however, the ice will melt, the canal feeder will be required for its original purposes, and, unless some effectual measures are taken, the evil will be upon us again with augmented magnitude. I have shown the effect of the river in only one disease, but it must not be supposed that erysipelas is the only sickness produced by filth. Typhoid and typhus fevers, malignant dysentery, typhoid pneumonia, and epidemic and malignant forms of a whole host of diseases follow in the train of such causes. No city can be bathed in putrid air with impunity; and if Chicago shall neglect to make a thorough removal of its filth, it will be infallibly scourged with these pestilences which through all time have smitten cities that commit similar sins against cleanliness and pure air.

ARTICLE IV.

CASES READ BEFORE THE CHICAGO MEDICAL SOCIETY. FRIDAY EVENING, NOV. 13, 1863.

BY HIRAM WANZER, M.D., of Chicago, Ill.

MR. PRESIDENT AND GENTLEMEN.—I present you two pathological specimens. One a cancer of the uterus; the other a

bony specimen of comminuted fracture. I have lately had three interesting cases of injury of the knee-joint, which I will relate; together with other cases which may be of interest to the Society.

The first case was a compound comminuted fracture of the tibia and fibula at the upper third, caused by a rail-car passing over the limb, crushing the bones in numerous fragments, and reducing the neighboring soft parts to a mere pulp. Stimulants were freely given to promote reaction, Dr. FISHER was sent for. By the time we were ready for operating, reaction, we thought, was sufficiently established. I amputated at the lower third of the thigh. Only the femoral artery required ligation. This was about 5 o'clock P.M. I requested the family to send for me at 4 o'clock the following morning, should he be living.

As the messenger was leaving the room, the patient rallied and conversed with his friends. Not 15 minutes elapsed, and before the messenger had time to reach my office, he sank in the arms of death, without a struggle.

To me there appears something singular in this sudden death. He had been semi-comatose up to 15 minutes before death, when he suddenly rallied, cheering friends with bright prospects of a certain recovery. Many of the Society, older in the profession than myself, having witnessed many death-bed scenes, can perhaps better account for it.

The second case, a German, æt. 30, was run over by a rail-car, receiving a compound comminuted fracture of the tibia at its upper third; also fracturing one of the condyles of the femur.

The bony specimen is before you. The soft parts were in the same condition as the case previously mentioned. I dispatched a messenger for Prof. E. ANDREWS, who, upon his arrival, examined the injury and found that the fracture extended to the cavity of the knee-joint. He advised, as the only alternative, for the patient, immediate amputation. I amputated at the lower third of the thigh, as near the joint as possible. Only the femoral artery and a small muscular branch required liga-

tion. The patient had long made too liberal use of the various alcoholic drinks. The fourth night after amputation, delirium traumaticum supervened, and it became necessary to give freely his accustomed beverage, which overcame these symptoms. But while we were overcoming the delirium on the one hand by the stimuli, we were at the same time inducing a hyper-excitement of the heart and arteries on the other. In a very short period, alarming secondary hemorrhage from the femoral artery occurred, which, however, was speedily controlled by compression over Poupart's ligament. The hemorrhage recurred at intervals for one week; so that it became necessary to withdraw stimulants altogether. Will that blissful period ever dawn upon our profession, when some substitute for alcohols, in medicine, will be devised. They carry with them a polution and a degradation which can never be washed away; and our profession to-day are in part responsible for their inordinate use. But this was not the only pathological feature in the case. Traumatic erysipelas occurred in the stump, resulting in suppuration and sloughing of a part of the soft parts of the thigh. A free incision obviated a part of this difficulty.

The stump now looks well, and is healing rapidly by granulation; and I regard the patient as completely out of danger.

The third case was an injury of the soft parts in the popliteal space, without fracture. The man fell upon the railroad track. The wheels of a loaded wagon passed over the limb, dividing the soft parts transversely, nearly across the popliteal space, just below the joint. The internal head of the gastrocnemi muscle was divided, together with the internal articular arteries, veins, and nerves; and I apprehend the popliteal artery also. The instantaneous hemorrhage was alarming. When I arrived he was apparently exsanguine, and exhausted from loss of blood. The shock I consider greater in this case than either of those we amputated. As the hemorrhage had ceased before I arrived, I flexed the leg upon the thigh, it being the only way the parts could be brought in apposition. This method assisted also in preventing future hemorrhage. Several interrupted sutures, compress, and strong bandage were all

the treatment necessary at this time. Reaction was not established to any degree until the next morning.

I continued flexion until the wound was nearly healed and the danger of secondary hemorrhage passed. The same symptoms of delirium traumaticum supervened, as with the other, and it became necessary to give him freely his accustomed beverage, until this danger was overcome; supperadded to these aggravated symptoms, there was a phagadenic inflammation of the superficial structures of the thigh. The granulations assumed a most unhealthy appearance. The suppuration extended along the fascia and flexor muscles of the thigh to near the hip. This suppurative diathesis was soon overcome by generous diet, large and frequent doses of tinct. ferri muriatis. The matter was localized by a compress and strong bandage above. I commenced extension before the wound entirely united. At present there is no perceptible shortening, and he walks easily with a cane.

The fourth case was a dislocation of the shoulder. The head of the humerus was thrown forward under the clavicle, and felt there distinctly. There was undue prominence of the acromion process. I placed him in the recumbent posture, and with my heel in the axilla made extension in the manner I have previously, where the head of the humerus was dislocated downwards in the axilla. This manipulation proved unavailing. As the dislocation was sub-clavicular it was necessary to make extension obliquely downwards and backwards, it being in a direct line with the displacement. By this most simple method the humerous was easily dislodged and entered the glenoid cavity. I would ask the Society, how many dislocations of this kind they have met with? As our books do not make frequent mention of them.

The fifth and last case I will present you this evening was cancer of the uterus. I was called to Mrs. T., æt. 44, mother of five interesting children. She had been suffering with cancer of the uterus six months. The intolerable odor emitted led me to diagnose the case as cancer upon my first entrance into her chamber. A few of her more general symptoms I will

briefly describe. There was severe lancinating, hypogastric, lumbar, and femoral pains, often amounting to agony. There was an occasional sanguinolent, and a constant fetid discharge from the vagina. Her countenance was hippocratic, and there was extreme emaciation, a yellow tinge of the skin, and hectic fever. Constant vesical and rectal irritation, and continual constipation. The bowels were never moved without cathartics or laxative enemas. Her appetite remained unusually good. These were the symptoms when I was first called, significant of malignant disease. A digital examination revealed the lower fifth of the recto-vaginal septum and the posterior lip of the os and cervix uteri converted into a mass of schirrus. The anterior lip of the os and cervix uteri had previously disappeared from ulceration. The schirrus mass mentioned sloughed away one week previous to her death, opening the vagina and rectum into one passage; and I apprehend the bladder became perforated also. The irritation of the intestinal and urinary discharges became then so great that I think it hastened her dissolution. She lived seven weeks after my first visit. The treatment was only paliative: large doses of morphia frequently given to allay pains; strong laxative enemas and chlorine washes constituted the major part of the treatment. Autopsy revealed what you see. The fundus and body of the uterus a mass of schirrus. The os, cervix, and lower part of the body of the uterus, and lower fifth of the recto-vaginal septum entirely sloughed away by ulceration. The ovaries, fallopian tubes, broad ligaments, and the other appendages of the uterus, do not seem to be involved in the disease.

Dr. JOHN BARTLETT assisted me at the *post mortem*. Had I had time, I should have invited other members of the Society. In conclusion, I must apologize to the Society for the imperfect manner I have presented these cases.

ARTICLE V.

CLINICAL REPORTS.

CEREBRO-SPINAL MENINGITIS—LETTER FROM A CORRESPONDENT—CLINICAL REMARKS IN REPLY; BEING THE SUBSTANCE OF A LECTURE TO THE CLASS IN THE CHICAGO MEDICAL COLLEGE.

By N. S. DAVIS, M.D., Prof. of Practical and Clinical Medicine.

By cerebro-spinal meningitis, we mean an inflammation of the membranes and surface of the base of the brain, medulla oblongata, and upper part of the spinal cord. Ordinary inflammation of this portion of the nervous system is not of frequent occurrence in general practice, although occasionally met with, both in adults and children. When it does occur it is always dangerous, and often speedily fatal to the patient. This arises from the direct connection of this portion of the nervous centres, with the most important functions of animal life, such as respiration, circulation, and deglutition. An attack is generally ushered in by chilliness, followed by general febrile reaction; pain in the occipital region, often extending to the back of the neck and shoulders; stiffness or rigidity of the muscles of the neck and jaws; sometimes cramps in the muscles of the arms, with difficulty of deglutition; a contracted, frequent, and variable pulse; hurried respiration; and, as the disease advances, delirium ending in coma. While sporadic cases of this inflammation are not of frequent occurrence, a modified form of it has often occurred as an epidemic, in circumscribed localities. When thus occurring epidemically, it has been found to have been either closely associated with the prevalence of erysipelas, or connected with the same circumstances that usually originate typhus and pyæmia, namely, close and ill-ventilated rooms, over-crowded and uncleanly camps, &c.

We are occasionally informed of its occurrence and alarming fatality in very limited country districts.

Close inquiry, in most of such cases, will reveal the fact that those attacked have been sleeping in very small, or altogether

over-crowded rooms, without any ventilation whatever. Such was found to be the case with some families in a neighborhood near Valparaiso, Indiana, in which the disease appeared and proved rapidly fatal, soon after the intense cold weather that ushered in the present month.

Only two days since, I received the following letter from a medical friend at Manckport, Harrison County, Ind.:—

"PROF. N. S. DAVIS,

"*Dear Sir:*—Knowing that you have the opportunity to inform yourself concerning all forms of disease, I drop you a letter to ask your views in regard to a disease that is prevailing in this county, to an alarming extent. So far as my knowledge extends, every case that has occurred, up to the present time, has proved fatal. The person attacked, complains of a slight cold for about 24 hours, when a moderate chill occurs, lasting from one to two hours.

"This is immediately followed by pain in the back of the neck, spine, and limbs; stiffness or rigidity of the muscles of the neck and jaws; and soreness or morbid sensibility of the surface, even to the ends of the fingers and toes.

"In half an hour the jaws become closed, with loss of speech, followed in a short time more, by complete unconsciousness. Death usually follows the coma, in from two to three hours. Please give me some information concerning this disease, if your time will permit, and greatly oblige, yours truly,

"H. K. DEEN."

The description here given, though brief, is sufficient to identify the disease as a cerebro-spinal meningitis.

The pain extending from the occipital region down the spine, with rigidity of the muscles of the neck and jaws, morbid sensibility or soreness of the flesh, especially of the extremities; followed so speedily by unconsciousness and death, point unmistakably to the cerebro-spinal axis as the seat of the disease. The rapidity with which the disease progresses to its final termination, is one of its most striking features. Thus the distinct chill or chilliness that marks the onset of severe symptoms is

often followed by death in from six to twelve hours. But the *post mortem* examinations made by Dr. UPHAM and others, reveal not only the appearances of inflammation in the membranes enveloping the medulla and base of the brain, but more or less purulent or sero-purulent effusion. The rapid progress of the disease; the exceedingly brief period in which the suppurative process is established; with the sudden and generally fatal exhaustion of the patient; all indicate that the inflammation is of a strongly asthenic or septic character. This view of its nature is further indicated by the fact that the disease has often been associated with epidemic erysipelas; with the foul air of crowded military camps; and with small, unventilated lodging rooms in country districts.

If this view of the special character of the inflammation in epidemic cerebro-spinal meningitis is correct, it enables us readily to understand why the treatment by antiphlogestic and sedative measures on the one hand, or by simple stimulants and tonics, on the other, very generally fails to exert an appreciable control over the progress of the disease. It is well known that bleeding, general and local; cathartics; and sedatives, have been used without any apparent benefit.

When the disease has occurred in districts naturally malarious, quinine and stimulants have been freely used; and if I remember correctly, both were used in most of the cases reported by Dr. UPHAM, but with no apparent influence over the progress of the disease. Calomel has also been used, both in cathartic and alterative doses; but with no more success. Indeed the rapid progress of the disease affords not sufficient time to gain any important alterative influence from the mercurial preparations. And if the special character of the inflammation in these cases, is asthenic or allied in nature to pyæmia, as I have already suggested, mercurialization as well as depletion, is directly contra-indicated. The clear indications for treatment in such a grade of inflammation, are to increase the contraction of the capillaries of the inflamed part for the purpose of retarding the accumulation of blood in them; and to change the aplastic or septic condition of the blood, thereby preventing if possible,

the rapid development of the suppurative process with effusion. Being satisfied, from much clinical observation, that the views of BROWN SEQUARD, in relation to the action of belladonna on the cerebro-spinal centre, are correct; we should regard that agent as one of the most efficient for accomplishing the first indication named; while to meet the second indication we must rely on those remedies found most efficient in erysipelatous and pyæmic inflammations, such as the tincture of the chloride of iron and the sulphites of soda and lime.

During the last six months, five cases of cerebro-spinal meningitis have come under my care. The first was a boy, about 12 years of age. He had complained of headache and weakness for one or two days; but the severe characteristic symptoms did not commence until Saturday evening, and he died the following day in the afternoon. I saw him first, late on Saturday evening. I directed ice to his occipital and cervical regions; opened the bowels freely by a mercurial purge, and followed it with iodide of potassa. The next morning, he was visited by my colleagues, Professors ANDREWS and JOHNSON, who advised the use of quinine. The loss of consciousness and difficulty of deglutition, however, prevented the exhibition of more than a single dose.

The second case was an adult, female, and the mother of several children. After having felt some lassitude and indisposition for one or two days, she had a moderate chill, followed by some febrile reaction; severe pain in the back of the head, neck, and shoulders; with some convulsive movements and rigidity of the extremities. Alarmed at these symptoms, I was sent for in great haste, but did not reach the patient until about three hours had elapsed. I found her with moderate heat of the skin; an anxious expression of countenance; a small and frequent pulse; rigidly contracted condition of the muscles on the posterior part of the neck, causing the head to be drawn a little back, the jaws stiff, and deglutition difficult. The muscles of the arms were in a similar state of rigid contraction. All attempts to move the head and shoulders greatly aggravated the sufferings of the patient. The death of the boy, only a few

days previously, had caused me to reflect much on the nature of the supposed inflammation in these cases, and I determined to put this patient directly on the use of the *sulphites* with belladonna. I accordingly directed 15 drops of the tincture of belladonna and half a drachm of sulphite of lime to be given at once, and repeated in half an hour, after which they were to be taken every hour, until the muscular rigidity ceased, or the specific effects of the belladonna were visible on the pupils of the eyes; after which the interval was to be extended to four hours. Ice was applied to the neck and occiput.

Under this treatment the muscular rigidity, pain, and fever soon began to abate, and in 24 hours all the severe symptoms were relieved, except stiffness of the neck and giddiness, with some pain whenever attempts were made to move the head. Under the moderate use of the same remedies, she continued to improve; and in four or five days was able to sit up. Her limbs, however, remained weak, and she was troubled with some unsteadiness in walking for ten or twelve days.

The third case was a boy, only two years old, in the same neighborhood with the second case, and was under treatment at the same time. The symptoms of cerebro-spinal inflammation were well marked, and the treatment the same as in the preceding case, only adapting the doses to the age of the patient. The relief was prompt and permanent, the child recovering fully in a week.

The fourth case was an adult, male, naturally athletic and healthy. He had been employed for some time as tender of a bridge, over the North Branch of the Chicago River: and that stream was at the time in a very foul and offensive condition. He was atacked in the night with a well-marked chill, followed by pain in the back of the head, neck, and shoulders; stiffness of the muscles of the neck, and frequent severe cramps in the muscles of the legs and forearms. When I was called to see him in the morning, his expression of countenance was haggard and anxious; his pulse small, frequent, and compressible; tongue moist; skin covered with moisture; mind depressed and taciturn; with considerable pain and stiffness in the neck, but,

at that time, no cramps in the extremities. Learning that the patient had had a well-marked chill, followed by fever and pain, while he was then perspiring, I too hastily inferred that the case was one of irregular and severe malarious fever; an inference which would have been corrected readily had I given due attention to the locality of the pains and the condition of the muscles of the neck and extremities. As it was, however, I ordered the patient six powders, each containing sulphate of quinine, 3 grs., sulphate of morphia, ½ gr., and calomel 2 grs., one to be given every three hours.

Before they were all taken, he became so furiously delirious that no treatment could be continued, and he died in little more than 48 hours after the commencement of the attack.

The fifth case occurred about two weeks since. The patient was a well-known citizen, aged about 50 years. On going out to his business in the morning, he felt some stiffness of the back of his neck, with an approach to vertigo or a slight sense of unsteadiness in walking. These symptoms were too slight to attract much attention during the day. About 5 o'clock P.M., he stepped into the office of a friend, where he suddenly became so affected with a sense of vertigo and exhaustion that he came near falling. He recovered his steadiness in a few minutes, and, accompanied by his friend, returned to his residence. During the evening he was chilly, and complained of severe pain in the back of his head, neck, and shoulders, with constant rigidity of the muscles of the neck.

These symptoms so rapidly increased in severity, that at 3 o'clock in the morning I was called out of bed to visit him. I found him with a countenance expressive of extreme anxiety and suffering; skin hot, but covered with perspiration; pulse small, frequent, and firm under pressure; tongue slightly coated; head drawn back and fixed firmly in its position by a rigid contraction of the muscles of the neck and jaws. He complained of intense pain in the back of the head and neck, extending in severe sharp paroxysms to the shoulders and right side of his chest. Every attempt to move the head or shoulders so aggravated these paroxysms of pain as to literally terrify the patient.

The skin being covered with perspiration, caused as the patient alleged by the severity of his pains, I did not deem it prudent to apply ice to the neck and occiput; but on the contrary ordered the application of cloths, kept constantly wet in a tepid infusion of aconite leaves. Internally, I directed 20 grs. of sulphite of soda, dissolved in a dessert spoonful of mint water, with 12 drops of the tincture of belladonna, every half-hour, until three doses were taken, and then once an hour, until my next visit. I also directed a powder containing 3 grs. of calomel and 6 grs. of Dover's powder, to be given every three hours. I visited the patient again in five hours. All my directions had been faithfully executed.

The second dose of calomel and Dover's powder caused slight vomiting, by which a part of it was rejected. On this account no more of them were given.

The only important changes in the condition of the patient were, a slower pulse; a more cheerful state of mind; and a subsidence of those severe paroxysms of pain through the shoulders and chest. The head was still firmly retracted, with pain in the neck, greatly aggravated by the slightest motion. I directed the sulphite of soda and belladonna to be continued every hour and a-half, and also, the narcotic fomentations to the neck. The patient continued to improve gradually through the day; and at night I directed the interval between the doses of the sulphite of soda and belladonna to be increased to two hours; and give three compound cathartic pills to move the bowels. On the following morning, I found the patient cheerful; the skin natural; pulse 85 per minute and soft; no pain while entirely still, or when slowly and cautiously rotating the head; but still inability to bring the head forward, or to indulge in any active movements without suffering. The pupils were moderately dilated by the belladonna, but there had been no movement of the bowels. I ordered a bottle of liquid citrate of magnesia to be taken in divided doses until it should operate, while the sulphite of soda and belladonna were continued every three hours. During the succeeding 24 hours, the bowels moved freely three

times, and the patient continued steadily to improve; though he complained of much lassitude and general weakness.

I continued the sulphite of soda and belladonna every six hours for two days longer, with nourishment; at which time the patient was able to leave his bed, though still feeling difficulty in bending the head forward, and some unsteadiness in walking.

I then directed a prescription consisting of bromide of ammonium, disolved in syrup of wild eherry bark, to be taken three times a day; and the recoveey has since become complete. It must be remembered that during the time that these cases were occurring, erysipelas was unusually prevalent in the city; and the general sanitary condition ot the whole city bad. The treatment of those few cases is not sufficient to test the value any of the remedies used. But if the inflammation, in these epidemic and rapidly fatal cases of cerebro-spinal meningitis, is of that specific character, which renders it analagous to erysipelas or pyæmia, as we have already suggested, then certainly, we must look for remedies chiefly to such articles as will counteract the septic or suppurative tendency, with such narcotics as diminish the morbid sensibility, by contracting the cerebro-spinal capillaries. Of the first class of articles, we know of none more reliable, or capable of being more rapidly introduced into the system than the tincture of chloride of iron, and the sulphites of soda and lime, and the chlorates. Of the latter class, the preparations of belladonna and strammonium are doubtless most efficient. But for any class of remedies to be efficient in a disease so rapid in its progress as cerebro-spinal meningitis, they must be administered early and efficiently.

VELOCITY OF NERVOUS FORCE.—The *Veterinarian* states that by the aid of a chronoscope M. Hirsch has come to the conclusion that nerves transmit their impressions at the rate of 34 metres a second. M. Heinholtz estimates the velocity of 190 feet per second, but his experiments were performed on the motor nerves of a frog, and those M. Hirsch on the sensitive nerves of a man.

Selections.

THE SURGICAL TREATMENT OF AMENORRHŒA.

By HORATIO R. STORER, M.D., of Boston, Surgeon to the Pleasant Street Hospital for Women.

Read by invitation before the Norfolk District Medical Society of Massachusetts. 1863.

The medical treatment of amenorrhœa has been fully discussed by a host of writers upon the subject; among the last of them, and very understandingly, by Dr. Wm. E. Bowman, of Montreal, in the *Canada Lancet*, for June, 1863. Inasmuch, however, as there are certain cases of the affection which, in the most skilful hands, resist all of the therapeutic measures instanced, either in our usual text-books, or in the valuable paper alluded to, it may be of practical advantage to take up the subject just where it is there left, namely, in its relations to obstetric surgery.

Cases of amenorrhœa, while among the most frequent of those applying for aid, and, from their very diversity of origin, among the most interesting, have often been found, in practice, the most tedious and discouraging. Certain possibilities also of mistaking their real character, and of unintentionally, and so far innocently, committing malpractice, and thereby of adding confirmation to an opinion already but too prevalent, that the profession directly, or by implication, sanction the induction of criminal abortion, render them among the most important to which our attention is called.

There are two dogmas concerning them, however, that, with all respect for the large and influential class of practitioners by whom they are held, should not be accepted. They are the following, and I prefer to state them as expressed by writers of authority:—

"It is easier," says Churchill in his last edition, "to manage almost any of the other curable diseases to which females are obnoxious."*

"All attempts," remarks Condie, "to bring on the menstrual flux by directly irritating the uterus, whether by the introduction of bougies or not, are unjustifiable; we can conceive of no case in which they would be calculated to do good; they cannot fail, in many cases, to be positively injurious."†

* Diseases of Woman, p. 152.

† Editorial note to Amer. ed. of Churchill, p. 149.

In practice, such statements are daily disproved.

As a general rule, it will be found, recollecting the possibility of an unusually early occurrence of the menstrual climacteric or normal cessation, that amenorrhœa which has resisted all the therapeutic measures usually resorted to, depends, in the absence of pregnacy, upon one or other of the following causes:—

1. That the uterus is absent, or
2. Imperfectly developed;
3. That it has undergone too completely the process of involution after normal labor or an abortion;
4. That the nisus uterinus of menstruation or nervous excitability of the uterine mucous membrane is in abeyance, even though the ovarian excitability, and even the performance of their peculiar function, may be normal and complete;
5. That the cervical canal or its inner orifice is partially contracted, organically, or by tonic or clonic spasm;
6. That there is complete occulsion, congenital or acquired, of either the uterus, vagina, or external organs;
7. That there exists metritis, acute or chronic, or some other general affection of the uterine mucous membrane, or a chronic retention within its cavity, as of fœtal debris;
8. That there is lesion, usually inflammatory, of one or both ovaries; producing its effect, perhaps, by derivation, or prevention of the usual and normal sanguineous determination;
9. That there is present either general toxæmia, some distant organic disease, by its local congestions preventing the usual afflux of blood to the uterine system, or some distant functional disturbance giving rise to a drain upon the general system, whether hemorrhagic, diaphoretic, leucorrhœal, diabetic, or lacteal.

Any of these varieties, though more frequently the latter, may be attended by vicarious menstruation from distant surfaces, causing often the gravest errors respecting the true character of the disease; a fact that explains many of the cures of so-called phthisis, chronic dysentery, &c., by irregular practice.

The several classes instanced are all more or less commonly met with, and are all amenable to treatment. From this statement I do not even except certain instances of the first class, those where the uterus is entirely wanting, which require, as will be seen, even more judgment and skill than any of the others.

Depending upon such varied causes, it is evident that the utmost care is necessary in the differential diagnosis of any given case; and though I do not now propose to discuss the respective

characteristics of either or any of the different varieties, there are yet certain surgical considerations bearing upon this point, of such importance as here to demand mention.

First and foremost; a thorough physical examination of the patient, in cases of amenorrhœa that have resisted all the resources of general treatment, becomes absolutely necessary. As a rule, unmarried women should never in any case be subjected to such examination, unless the existence of organic disease or displacement is undoubted or reasonably suspected, or the woman has previously borne children, until all ordinary strictly medical measures have been brought to bear. On the other hand, married women, presenting any of the symptoms usually diagnostic of uterine or ovarian disturbance, should never be prescribed for until a proper physical examination shall have been effected.

2d. The examination when made, if in the case of an unmarried woman, should generally be aided by an anæsthetic, alike to prevent mental and physical suffering, and by complete relaxation of all pelvic muscular action to facilitate the diagnosis. The usual plea for refusing an anæsthetic at this time, that it is well for the patient to be able to realize her pain, I consider of no weight whatever; so deceptive are the reflex sensations produced by local pressure within the cavity of the pelvis, that it is of far greater advantage to have them altogether absent.

3d. Except in the instance of atresia vaginæ, or some other local lesion absolutely demanding direct vision, the examination, especially in the case of an unmarried woman, should be only by the touch and that longer finger, the uterine sound. The obstetrician should always carry an eye at the end of his forefinger, and it is just as easy to educate the touch to this, as for the blind to their alphabet. Were the use of the speculum confined to the cases where alone it is legitimately required, namely, the comparatively few instances actually demanding local stimulation or cautery, there would be far less quackery in obstetric practice, and far more general appreciation of the real frequency and importance of uterine displacements.

4th. In using the uterine sound, which is here indispensible in many cases to a correct diagnosis, the possibility of pregnancy must be borne in mind, even though the patient be unmarried, no matter how respectable her position, correct her general history, extensive her hymen, or of what standing the absence of her menses; for in default of this precaution many an unexpected abortion has been induced.

This premised, I proceed directly to the surgical treatment of amenorrhœa.

In the first place, the uterus is sometimes absent, and I have said that where this has been diagnosed, there are required extreme judgment and skill. It is often much more difficult to withhold the hand than to attempt aid, but it is evident that in many cases all assistance must be absolutely impossible. There are others, however, where the ovaries exist, and are perhaps well developed, and where there is an evident ovarian molimen. Here the question of attempting treatment will depend upon the theory held by the attandant, as to the essential nature of menstruation, and upon the condition of the patient during these monthly attempts at effective discharge. If the normal catamenia, which must be allowed to be strictly uterine or almost entirely so in their actual origin, are viewed as a mere incident or effect of the irritation or irritability consequent upon ovarian evolution, or as a mere independent excretion for the purpose of conveying from the uterus the unimpregnated ovum, it would hardly seem necessary ever to endeavor to assist nature in the cases to which we are now referring. But if, on the other hand, we grant that this discharge, while partly and by reflex action the effect of the ovarian irritability just alluded to, may also serve as a relief by crisis to any local congestion or disturbance dependent upon the same reflex action, and so evident in almost all cases of disordered menstruation,* and that the uterus besides, as has been well shown by Andral and Gavarret, is intended to act as an accessory respiratory organ,† then it may be thought judicious practice to endeavor to avert such congestion or disturbance by local depletions, dry cupping, &c., to the sacrum, abdomen, or region of the perineum. This treatment is undoubtedly indicated in plethoric patients, where the uterus being absent there is yet a molimen, and I am inclined to think it of importance in others, even where general congestion may not be present.

Secondly, the uterus being present, but as yet undeveloped. Here let me allude to the fact that conceptions may take place even though menstruation may never have occurred, and though

* My eighth class, where suppression of the menses accompanies ovaritis, though at first sight contradictory of the above hypothesis, really goes to confirm it; actual inflammation being a very different thing from a normal and strictly physiological congestion, and productive of wholly different effect.

† The importance, in this connection, of the above views I have elsewhere more than once insisted upon. They tend to explain the otherwise inexplicable fact of the immunity of chloroform from ill result during labor, the altered ratio of progress of phthisis during pregnancy, and other thoracic problems, and they account for the excellent results in the comparatively not uncommon cases of so called uterine asthma, which are almost always accompanied by amenorrhœa, obtained from the use of intra-uterine pessaries.

the uterus may be far smaller than usual, provided only that its canal and those of the Fallopian tubes are sufficiently developed to admit the passage of either ovum or seminal fluid. I speak decidedly on this point, for I am satisfied that conception has taken place not merely in the comparatively frequent instance of periodical leucorrhœa or colorless menstrual discharge, but even when no critical discharge whatever has been recognized.

The indication in these cases is on the one hand to stimulate the lining membrane of the uterus to its proper excretory action, and on the other to excite structural growth and increase in the several component tissues of that organ. Many of the measures by which this has been attempted have utterly failed; this is true of galvanism, however and wherever applied externally to the uterus, of all applications to the os or vaginal wall, of all attempts to produce reflex or sympathetic action by irritation of the rectum, with aloes, &c., and of the exhibition or ergot, here based upon an erroneous theory—for even if it were possible to excite uterine contraction in such cases by ergot, or I might almost add in any case unconnected with pregnancy at nearly the full period, it is not by such transient muscular efforts that we are to insure structural growth. In these cases it becomes necessary to invade the uterine cavity, and to have recourse to the means so ingeniously suggested to the profession, above all other men, by Simpson, of Edinburgh.

By the intra-uterine air-pump, the first of the two indications insisted upon may be fulfilled; I have more than once succeeded in thus inducing and keeping up the normal menstrual discharge when it had never before appeared. But this method has certain drawbacks; the instrument cannot be introduced unless there exists quite decided patency of the os, cervical canal and uterine cavity—it almost necessitates laceration of the mucous membrane, which under forcible suction must enter the open fenestræ, or even minute perforations, of the instrument, to which also it clings when this is withdrawn.

To the intra-uterine stem pessary, however, no such objections apply, and after an almost constant experience of its use for now nearly nine years, I do not hesitate to decidedly recommend it. Against this instrument very many objections have been urged; all of them, however, unfounded, provided certain precautions are taken.

The intra-uterine pessary, as I have elsewhere insisted,*

* Preface to Simpson's Obstetric Works, Amer. ed., pp. 16, 18.

For the purpose, as here, of producing intra-uterine action alone and not of remedying a displacement, it is not at all requisite that the instrument should

should perfectly fit the patient; that is, the diameter of its stem should be of such size as readily to enter both the outer and inner openings of the cervix, and its length such as not quite to touch or bear upon the fundus uteri, which can easily be decided by the previous careful use of the uterine sound. If these precautions are attended to, little fear of inducing undue irritation need be entertained.

For the treatment of the cases now under our consideration, and for the purpose of producing an additional therapeutic effect by decided galvanic action, the stem should be formed of copper and zinc, the strips of these metals being generally placed end to end; but perhaps a still better effect would be produced if they were soldered side by side. The amount of action produced in this way is shown by the fact that, upon withdrawing the instrument from the uterine cavity, while the copper portion remains almost entirely free from deposit, that of zinc is found incrusted with a thick layer of foreign matter, which upon chemical analysis resolves itself into the metallic salt usual under similar circumstances.

The effect of the galvanic intra-uterine pessary upon amenorrhœa dependent upon deficient development of the uterus, is of a threefold character; for while the mucous membrane is stimulated to its functional action, a profound impression is produced upon the deeper structures of the uterus both by the direct galvanic influence and by the action of the contained pessary as a foreign body—exciting persistent or at times interrupted muscular action for its expulsion, and thereby a general hypertrophy and increase of growth, as in the case of concealed polypi, etc.

In the third, fourth, and fifth classes of absence of the menstrual discharge that I have enumerated, the same treatment by the galvanic intra-uterine retained bougie is also indicated, and in each it is productive, in a large proportion of cases, of very decided effect. In the third variety the process of atrophy which obtains to a certain extent after ordinary parturition, is carried to an abnormal excess. The cavity of the uterus, instead of its usual size of two and a half inches, measures but an inch and a

be provided with the vaginal stem and external clasp; indeed these additions are now seldom required even for preventing displacements, except in extreme and obstinate cases. I am now constantly treating the various versions and flexions of the uterus by Hodge's excellent levers, against which I was formerly prejudiced, but now cannot laud too highly. Should, however, the double instrument of Simpson be found indispensable, I must urge the modification of it proposed by myself in 1856, (*Boston Med. & Surg. Journal, Nov.* 1856, p. 288,) by which a perfect fit to the patient may be insured.

half, an inch, or even less, and with this uterine effacement there often occurs also a cessation more or less complete of the performance of the menstrual function; the case as regards treatment being therefore rendered entirely identical with the class we have just been considering, those, namely, in which the organ has never been fully developed at all.

In some cases, again, there is apparently not the slightest organic deviation present, the ovaries seem to act in their normal manner, and yet the uterus does not respond by its usual flux. There is only wanting, as has been well suggested, a slight initiatory influence, like a touch to the pendulum, to be followed by regularity of menstrual recurrence and discharge.

In the fifth class of our series, which if but partial are generally attended by dysmenorrhœa also, there is required, in addition to mere stimulus and excitement, a certain amount of local dilatation. For this, the instrument already described may of itself at times suffice. Usually, however, I have found further measures required, relying sometimes upon the successive introduction of a graduated series of metallic bougies, and at others upon the use of expansible tents. Eight years ago, I referred to the advantages and disadvantages of sponge for this purpose,* and have found in practice the suggestion I then made, of tents self-lubricating from their own intrinsic mucilage while expanding,† to answer various important indications. As a general rule, I do not favor lateral incision of the cervix, because seldom necessary; but this treatment sometimes becomes indispensable in cases of amenorrhœa dependent upon the cause now described.

* *Boston Med. & Surg. Journal, Nov.* 1855; Simpson's Obst. Works, preface to Amer. ed., p. 16, *Sept.* 1855; this Journal, *Jan.* 1859, p. 57.

† *Association Medical Journal*, London, *May*, 1855, p. 446; *Glasgow Med. Journal, April*, 1856, p. 116.

In practice I have thus far found slippery-elm bark to afford the best material for the special indication above instanced. The sea-tangle (*Laminaria digitata*), a variety of the so-called "devil's apron," or giant rock-weed, has been suggested by Dr. Sloan, of Ayrshire, in the *Glasgow Medical Journal* for *Oct.* 1862, and since referred to by several continental writers. It is acknowledged, however, to enlarge unequally in consequence of its cellular structure, and is liable to "a bulbous expansion forming behind the stricture," as well as to "a marked increase in its length;" both of them decided disadvantages in producing dilatation of the uterus. In this connection I must acknowledge my obligation to Dr. Ephraim Cutter, of Woburn, for a communication from M. Bureau-Riofrey, of Paris, written at the request of Nelaton, containing little, however, in addition to what had already been presented by Dr. Sloan. I am at present investigating the subject, and may therefore yet find occasion to modify my unfavorable opinion. It is possible that the *L. saccharina* of our coast may prove as worthy experiment as the *digitata*, but our most common species, the *longicruris*, I do not hesitate to condemn; its hollow stem

In introducing the several instruments, to which I have alluded, within the os and canal of the cervex, certain precautions are all important. I have already spoken of the possibility of pregnancy, and of the risk in such event of unintentionally inducing abortion. The remark applied with equal force to the sound and intra-uterine bougie, whether these be applied for stimulation, dilatation, or the reduction of displacement. I am well aware of the tolerance and impunity with which at times the pregnant uterus bears such entrance, and have myself had several instances of this brought under my notice; but on the other hand, I have known, from the use of these instruments, more than one direct occurrence of the accident against which I would now guard the profession. I have already more than once referred to this matter in these pages, and have dwelt upon it at some length in my report upon the subject* rendered to the American Medical Association, in 1859; and, from much more extended experience of the true frequency of criminal abortion, I merely reiterate the opinions then expressed; their importance is rapidly becoming acknowledged.

The necessity of extreme caution in deciding upon the existence or not of pregnancy cannot be over-estimated. I speak with the more earnestness in this matter, because it is a point to which I have long given special attention. In a somewhat elaborate discussion, some years since, of the actual and relative value of the several signs of pregnancy usually recognized,† I was compelled to assert that the fœtal pulse is the only one upon which any certain reliance can be placed. This was at variance with the opinion then entertained by my friend, the late Dr. Montgomery, of Dublin, certainly the most eminent authority

collapses upon drying, and renders futile any attempt at its preparation or use. Careful examination of many other of our rock-weeds has as yet not furnished me any stems of sufficient size and tenacity for the purpose, the nearest approach to it having been in an unusually large and well-developed specimen of *Fucus vesiculosus*. It is to be regretted that there does not yet exist, as I am informed by our justly celebrated algologist, Dr. Durkee, any collection of the giant sea and rock-weeds of this vicinity. Prof. Agassiz writes me that those formerly collected by himself have been sent to his brother-in-law, Prof. Braun, Director of the Botanical Garden in Berlin, and their is no series of the character desired in the magnificent herbarium of Prof. Asa Gray, as I learn from that gentleman. A very few moments' inspection of such would at once decide as to what species alone our expectations could rationally be based upon.

* Transactions of the Amer. Med. Association, vol. xii, 1859, p. 75; *North Am. Med.-Chir. Review, Jan.* to *Nov.* 1859; Treatise on Criminal Abortion in America, Philadelphia, 1859, p. 70.

† Review of Montgomery's Signs of Pregnancy, *North Am. Med.-Chir. Rev., March*, 1857, p. 249.

upon this subject; shortly previous to his death, however, Dr. Montgomery wrote me that he both accepted and indorsed the limitation I had made.

Pregnancy being assuredly absent, it is only requisite to bear in mind the fact that as in other strictures, of the male urethra, for instance, spasmodic action often suddenly ceases upon long-continued gentle pressure, and allows the entrance of the instrument; and that in the frequent instance of complication with uterine displacement, it is at times necessary slightly to push up the fundus uteri, and so straighten that organ before such entrance can be effected. The cases where, the uterus and ovaries being perfectly normal, there yet exists obstruction or occlusion of the Fallopian tubes, from the extension of general peritonitic inflammation or otherwise, are still beyond all operative aid, despite Tyler Smith's ingenious but impracticable proposal of tubal catheterization. In such instances, a menstrual discharge may or may not regularly take place; if both tubes, however, are closed, the escape of ova or passage of semen, and consequent conception, are manifestly impossible. In these cases the possibility of peri-uterine hæmatocele, from ovarian hemorrhage attending an attempt at ovulation, must be borne in mind.

There remain but three more classes of amenorrhœa remediable by the surgeon. Of these, one, the sixth in our enumeration, where there is complete occlusion, congenital or acquired, of the generative canal, has been amply treated of by many surgical and obstetric writers. One single point regarding it has, however, been almost universally lost sight of, the liability, namely, in these cases, after so remarkably simple an operation, to a fatal result; yet the explanation of this is very simple, and its indication in practice equally plain.

A small incision, which is generally made through fear of occasioning collapse, should the uterus be suddenly emptied, is almost sure, in consequence of the thick and inspissated condition of the fluid usual in retained menses, to occasion powerful uterine contractions after the flow has once begun; just as these take place after labor, from the presence of clots, shreds of membrane, etc., foreign to the uterine cavity. During these contractions, the natural outlet being still impeded, there is no doubt that at times a portion of the retained fluid is forced backward through the Fallopian tubes into the cavity of the abdomen, giving rise to fatal peritonitis. By a free incision of the obstruction, therefore, whenever existing, the uterus should be emptied as rapidly and as thoroughly as possible, even to the extent of completely rinsing its cavity by gentle injections of

lukewarm water or soapsuds, and subsequent compression through the abdominal walls, as in a case in which, nearly ten years ago, I assisted my friend, Dr. Malcolm, of Edinburgh.

Previous to this operation, and I am daily more and more inclined to extend the precaution to all that involve the pelvic viscera, it is well to have recourse to the preparatory treatment recommended by Clay, of Manchester, in cases of ovariotomy, giving doses of ox-gall for several days. I am also in the habit, from the analogies obtaining alike in origin, progress, and result, between erysipelas, puerperal and surgical fever, and peritonitis, of depending somewhat upon the preparatory administration of muriate of iron.

The next cause that awaits us is where there exist certain general organic lesions of the uterus itself, its walls or their lining membrane. These affections as causing amenorrhœa are few, hyperæmia of the mucous membrane and menorrhagia being here the rule, and can only be ascertained under dilatation by expansible tents, which may unexpectedly reveal, as it has not unfrequently done, the retained remains of some long past or forgotten conception. It is in the former of these cases, especially where following an attack of metritis, that we find the best results from a direct application to the lining membrane of the uterine cavity, either of nitrate of silver and other stimulants in substance, or in solution, by a sponge. This of course must be done by the aid of instruments specially constructed for the purpose;* and I would suggest that from galvanism thus locally applied by wired sponge through a long and curved canula, as has lately been done in the case of the female bladder,

* I have long been in the habit of using for this purpose an instrument similar to that proposed by Lallemand for the male urethra, but have always been dissatisfied with its size, its complexity, and in recommending it to my friends, its comparatively great cost; the lower portion both of the sheath and the contained stem being necessarily of platinum. Of late, however, I have used an implement of much more simple construction, for the suggestion of which I am indebted to my friend, Dr. Mack, of St. Catharine's, C.W., who seems to have been the first to apply it in practice, although a form closely similar has lately been proposed by Dr. Lente, of New York, (*Amer. Med. Times, Sept.* 26, 1863.) Dr. Mack uses a bullet-probe, coated at its tip with a caustic bead, obtained by dipping the slightly heated point of the probe in fused nitrate of silver. To render the instrument more convenient for constant use, I have supplanted the pincers and slide in the usual closed and jointed caustic holder for the pocket, by a stout platinum wire, probe-pointed, which can be easily kept armed with the nitrate, and will be found upon trial to answer a most admirable purpose; the probe may here be made movable, and inserted within the grasp of the stationary forceps when required; at other times being kept in the hollow space of the handle. The instrument thus constructed answers a double purpose, and Messrs. Codman & Shurtleff, instrument makers, of Boston, are now prepared to supply it to the profession.

a much better effect would be obtained than from any other mode in which it has been applied for amenorrhœa. I would decidedly condemn the use of every kind of intra-uterine injection, for whatever purpose indicated, unless, as I have said, to cleanse the cavity after the operation for retained menses; since they are much less easily controlled in action and, for other reasons, are attended with infinitely more hazard.

The last of the divisions described, those depending upon ovarian inflammation, as in many cases of so-called spurious pregnancy, or upon general organic or functional disturbance, would at first sight seem evidently within the domain of strictly medical treatment. On the contrary, it is by a direct appeal to the uterus itself by one or other of the methods to which we have so often alluded, that we must sometimes combat the existing lesion or functional abberration; in many cases of incipient phthisis, for instance, where there has been no vicarious hemorrhagic discharge, and consequently no error of diagnosis, the disease has thus been warded off, or if already developed, stayed. Any excessive or abnormal flux should of course be met by every means in our power, but these means are often utterly inefficient unless accompanied by treatment directed to the uterus itself; thus diabetes and hæmaturia, leucorrhœa and hæmorrhoids, chronic dysentery, salivation and galactorrhœa, may all, while explaining the existence of amenorrhœa, themselves be kept up by the very quiescence of the uterus; so that, paradoxical as it may seem, to remove the cause it is here also necessary to remove its effect.

To the classes I have now enumerated I must add one other, none the less interesting from its rarity; the instances, namely, where the ovaries are absent, either congenitally or by operation, though the uterus is present. In the latter instance, the case at once declares itself by its history; in the former it is generally only after a long study that the diagnosis can finally be reached. As to treatment, we can only content ourselves with that recommended for absence of the uterus, to combat any general or local plethora that may exist, and for the rest patiently to withhold the hand.

LATENT SYPHILIS.

In reply to an inquiry addressed to medical practitioners in all countries "On the influence which an Anti-Syphilitic Mercurial Treatment of Parents has on the Health of their Child-

ren," Hebra draws certain deductions from ten cases occurring in his private practice, among which conclusions we find the following: "Syphilis may remain latent in the body, without discovering itself by any symptoms, and first betray itself by the syphilitic affection of the children."--(*Year-book of Surgery*, 1860, p.322.) By which is meant, that a man may contract syphilis, and fancy himself well, and yet after marriage, at some distant period, while in apparently perfect health, beget children, who may become the subject of the syphilitic taint in a constitutional form. The great difficulty in obtaining perfectly reliable information on these questions from patients must be admitted by all, but still, with care, we may arrive at a close approximation of the truth.

Hebra states a fact which has been recognized by many in the surgical practice at St. Bartholomew's Hospital for a long period. The two following cases, which came under Mr. Coote's care on August 15, 1863, illustrate, he considers, Hebra's views:—

Case 1.—Jane M., aged 27, a healthy looking young woman, married three years, came to the hospital bringing an infant covered from head to foot with syphilitic psoriasis. She said that the eruption showed itself a few days after birth, and the child had since pined and become emaciated. She added that she had one other child about eighteen months previous, which was born dead. The closest inquiries were made as regarded both her own health and that of her husband. She replied readily and frankly, with a full knowledge of the purpose of the question, and assured us that no illness had shown itself on either herself or her husband in any way during their married life. The child was ordered two grains and a half of mercury and chalk twice a day, and is going on favorably.

Case 2.—Elizabeth A., aged 16, a slightly made, pallid child, living with her parents, came to the hospital with a circular and perforating phagedænic ulcer of the soft palate, the size of a sixpence, with tawny surface and inflamed circumference. There were adhesions of the left iris around the pupilary margin, but no indications of recent iritis. She was questioned with care, consideration being of course shown to her youth, and it was obvious that she was innocent of any irregularity. It was also denied that either parent had ever suffered from syphilitic disease during married life. The edges of the ulcer were touched with nitric acid diluted with five parts of water. She was ordered three grains of iodide of potassium in sarsaparilla. The case is going on well.

Hebra adds that the reverse may happen, viz., fathers infected with general syphilis may neither infect their wives nor produce syphilitic children. In illustration of this statement I mention the following case:—

Case 3.—Thomas W., 38, a respectable man, contracted syphilis twelve years ago, and only on that occasion. He had an indurated chancre at the reflection of the prepuce on the glans penis. It was treated with mercury and disappeared, and the man remanied well for two years, when he became the subject of syphilitic lepra, chiefly affecting the arms, chest, and head. In course of time the eruption disappeared, and seven years ago he married. His wife and children are in good health, but he is subject to syphilitic ulceration of the tongue and fauces, and to occasional attacks of lepra in a slight form.—*Med. Times and Gaz., Sept.* 15, 1863.

VARICOCELE OF TWELVE YEARS' DURATION; GREAT PAIN IN THE TESTICLE; OPERATION BY WIRE LIGATURE; CURE.—

H. G., æt. 24, a butcher, was admitted into Westminster Hospital, under the care of Mr. B. Holt, April 16, 1863, suffering from varicocele of twelve years' duration. He states that for many years he has been accustomed to ride for several hours a day, and frequently without a saddle; that he does not remember to have met with any accident, but that his business required him to stand for a considerable period of the day; that he always felt weak, but has not been laid up with any serious illness. Twelve years since he complained of pain in his left testicle, which was increased upon exertion, and occasionally was very severe at night. He consulted a surgeon who advised him to wear a suspensory bandage; but although he had continued to do so, the pain in the testicle had latterly so much increased as to compel him to abandon his work. Upon examination, the usual tortuous and congested condition of the veins was detected behind the testicle, which, however, could be emptied by placing him in a horizontal position; but when pressure was applied over the external abdominal ring, and the patient was desired to resume the perpendicular, the veins were more swollen than before. The vas deferens could be easily isolated.

Mr. Holt determined to tie the veins with the wire suture by the subcutaneous method; and the patient being placed under

the influence of chloroform, and the vas deferens isolated, a needle armed with the wire ligature was passed through the scrotum behind the diseased veins, and made to perforate the scrotum on the inner side. The needle was now made to enter at the same opening, and the wire was passed in front of the veins, and so out at the first puncture; thus no skin was included in the wire loop, but merely the veins and some areolar tissue. The wire was now twisted, and the same proceeding was adopted a little lower down, by which the veins were thoroughly included in two ligatures. The wires were now shortened, the intention being to subject the veins to compression for three or four days, and then to remove them by simply untwisting them. For the next three days the patient was comfortable, and did not complain of pain. There was slight swelling, and tenderness when the part was touched, but no other pain. On the fourth day Mr. Holt intended untwisting the wires as before described; but the twisted portion was so deeply imbedded that he determined to cut both ends short, and leave them as permanent compressors. The punctures healed in two days, and the wires remained, not exciting any irritation or disturbance, and the patient was able to work without inconvenience. He was detained in the hospital for a fortnight that Mr. Holt might see whether any inconvenience was experienced; but none having occurred at the expiration of that time, he was discharged, but requested to present himself from time to time that the result might be watched. The veins between the ligatures were entirely obliterated, and the patient described himself as perfectly free from any pain in the testicle. He has presented himself occasionally as requested. The wires can be felt, but they do not occasion any inconvenience, and he has resumed his work with a perfect immunity from pain.

Mr. Holt remarked that this was a case from which probably some instruction might be derived. He stated it was not his intention, in the first instance, to have left the wires around the veins; but as there was some little difficulty in their removal, he determined to retain them, as in all probability they would not excite irritation, and they would positively prevent any recurrence of the disease. He considered it was a practice that might be repeated with advantage. The pain of the operation was merely that which resulted from the two punctures in the skin, and the patient had not otherwise suffered, as was almost always the case when any portion of the integument was subjected to pressure. The operation was in itself of the easiest possible kind to perform, and he did not consider the patient

need be confined to bed. Should future cases be attended with a like favorable issue, the proceeding would become general, and the pain and time of the patients be considerably abridged, while the question of recurrence would be entirely set at rest, such an occurrence being impossible so long as the wires acted as compressers.—*Lancet, Aug.* 16, 1863.

Editorial.

SMALL-POX HOSPITAL.

As many of our readers may have seen alarming accounts of the prevalence of Small-Pox in this City, in the daily papers, and still more alarming accounts of the condition of the Pest-House or Small-Pox Hospital, we copy the following report of the condition of this institution, made by Dr. BARTLETT to the Chicago Medical Society a short time since. The report is perfectly accurate in its statements, and furnishes a good illustration of the inadequate attention generally paid to the most important Sanitary matters, by the Municipal Authorities of some of our large cities.

There is really no more cause for alarm concerning the prevalence of Small-Pox in the city now than there has been at any time during the last four months. When our Legislative and Municipal Authorities will adopt efficient and compulsory measures for having every child vaccinated before it is two years old, and re-vaccinated between the ages of fifteen and twenty years, Small-Pox will be essentially expelled from the community, but not until then.

Dr. BARTLETT'S report is as follows:—

Mr. PRESIDENT.—The committee appointed at the last meeting of this society, to investigate the condition and management of the City Pest House, report as follows:—

"The Pest House was established in October, 1862. Dr. L. P. Cheney is physician to the institution, and Mr. C. S. Perry is the directing officer. It is situated near North Ave., between Clark Street and the lake. The site is unobjectionable, except

that the potter's field lies within twenty rods of it. The building is an old one-story frame, fourteen feet wide and sixty-eight feet long, having a small L at the westerly end. The main part of the house is divided into four rooms, communicating with one another, each fourteen by seventeen feet. The L is divided into two very small and low rooms for the nurses. The westerly room is the kitchen, the three others are wards. Each is lighted by two windows, placed opposite one another in the north and south walls. Two of them have outside doors. These three rooms have an air-space of 6,426 cubic feet. Means of warming the house seemed ample, though no instruments are used to regulate the temperature. The floors gave evidence of recent scrubbing; but in places they were foul with spittle and expectoration. There were no spittoons; the sputa of the bad cases were received in chamber-pots, each of which contained urine. The walls were black and dirty.

The windows were all closed. The outside doors of the second and third rooms stood ajar, and there was an open pane in the window of the first ward. Drafts of air were admitted, which might be deemed to be as unsafe to some of the patients as they were salutary to others. No proper means for permanent ventilation exist. The atmosphere of the rooms was not, at that time, more offensive than a badly regulated hospital for ordinary diseases. The peculiar odor of small-pox was not perceptible, except in the immediate vicinity of the worse cases. No disinfecting agents are employed.

In the female ward there were six beds; in the second room, seven; and in the third, six. For bedsteads, army-cots are used; upon these single mattresses are placed. The bedclothes consist of cotton quilts only. Some of the patients lay on mattresses, nearly all had one or more comforters under them. There were, with one or two exceptions, no sheets or pillow-cases used; though the Health Officer stated that a quantity of these articles were on hand. The beds and bedding appeared very filthy, and there is reason to believe they were so. The quilts are aired, but never washed. After bad cases, the mattresses are burned; commonly, they are filled with new straw. Several badly soiled cots and mattresses were observed in the yard, which, it is presumed, were to be used after airing.

There is but little hospital clothing for patients.

There are no screens for the dying. There were in all twenty-five patients—eighteen males, five females, and two children. Four were dangerously sick, nine were progressing favorably, and twelve were convalescent. The cleanliness of the patients

seemed to be entirely neglected. The medical attendanr stated that, not so much as their faces were regularly washed, and this was done only when they were uncommonly filthy from effusions of blood or matter. Your committee saw much to confirm this statement. Sometimes the physician has had occasion to reprove the nurses for delay or neglect in removing the excretions of bad cases, but generally there has been no ground for complaint. One case of serious delinquency on the part of the dresser fell under observation.

The convalescents are allowed the liberty of the house. The second ward has an air-space of about 2,142 cubic feet. This is less than the minimum space set apart in well-regulated hospitals for *two* patients. Beside the seven patients belonging in this room, there were, at the time of the visit, four convalescents. Six of these men were negroes.

The clothes of persons entering the hospital are put out to air. No patient is allowed to go out without a written discharge from the physician.

No opportunity was had to ascertain the diet of the patients. There is no diet table.

The kitchen was perfectly neat, and the larder not wanting in good, substantial articles of food. It was stated that any diet could be procured commonly used in hospitals.

Two women and one man, with the assistance of convalescents, discharge all the duties of the house. The physician visits the hospital as occasion requires, usually once daily. The treatment employed by him does not materially differ from that generally adopted. In mild cases he pursues the expectant course. He allays undue excitement in the beginning with antimonials. When the secondary fever assumes a low form, or if exhaustion from any other cause threatens, strength is sustained by strong broths and quinine. Occasionally alcoholic stimulants are necessary, but they are not thought so generally applicable as preparations of bark. Dr. Cheeney attaches great importance to securing sleep. With him, opium is a favorite medicine throughout the disease.

The sarracenia purpurea has not been tried. The sulphite of soda has been used with some apparent advantage.

Of late, no applications have been made to prevent pitting. Dr. Cheney has not found those means, the use of which seemed practicable under the circumstances, to be of much benefit. He stated, however, his intention to put in use other new methods from which he anticipated success. The rooms are kept darkened and, as a rule, there is no pitting.

The mortality has been very slight. Since the establishment of the hospital, 199 have been treated. Of these 36 died—a death-rate of a little over eighteen per cent. Dr. Cheney may very well congratulate himself upon so favorable a record, especially when the disadvantages under which he has labored are duly considered.

On the day of the visit of your committee, a new ward was being opened. It forms an L with the east end of the main building. It is 17 by 18 feet, with a height of ceiling of 7 feet 6 inches. Two small half windows on either side will be the only means of ventilation.

In conclusion, your committee would state that every facility for obtaining the desired information has been courteously afforded them by the physician in attendance. The Health Officer also gave his assistance.

On motion the report was adopted.

UNITED STATES SANITARY COMMISSION.

To His Excellency the President of the United States:

SIR:—The United States Sanitary Commission, authorized by the Government to act as a Commission of Inquiry and Advice in respect to the sanitary interests of the national forces, have been for more than two years and a half close and careful students of the medical and hygienic affairs of the army. They ought to be, they are thought by the people of the United States to be, they claim to be, better acquainted with the working of the Medical Department, whose deficiencies, mistakes, and necessities, it is their solemn duty to discover and obviate, than any other responsible body of witnesses. Trusting in their discretion, zeal, and works, the people of the loyal States have made them their almoners, to the extent of seven millions of dollars' worth of sanitary stores, and a million of dollars in money. The disbursement of this immense charity has brought our agents into close and continual contact with the Medical Department, to whose steady and rapid improvement from the imperfect state in which we found it, to its present degree of surprising and gratifying efficiency, we are able to lend a most indisputable testimony. We attribute this immense improvement to the fact that for two years the Medical Department has been directed by Dr. W. A. Hammond, Surgeon-General, a man known to all impartial and competent judges, as thoroughly scientific, highly endowed, large-minded, and an energetic and controlling administrator. He was selected for his office solely

for fitness, and in our calm and deliberate judgment, his administration has more than justified all the high hopes and expectations of those who recommended him for the place.

We hear from sources that do not permit us to doubt the fact, that cautious but systematic efforts are now making to remove Surgeon-General Hammond from office. In the name of some millions of constituents, in the name of the homes of this country, whose solicitude, liberality, and watchfulness we represent, we respectfully and conscientiously protest against the secret tribunal, and the indirect methods by which the good fame of the Surgeon-General has been already seriously, and we believe unjustly, aspersed. We protest in our character of experts, a body whose business it has been made to inquire and advise on this very subject, that the removal of Dr. Hammond would be as serious a blow at the lives, comfort, and efficiency of the army as the enemy itself could inflict; that the science of the country, the humanity of its homes, and the army itself, would resent it as a cruel wrong and an alarming error; and we feel ourselves bound, in the interests of the soldiers in the field, and of those about to enter the service of the country, in defense of our own principles and convictions, and in the name of the science, the charity, and the fair-mindedness of the nation, to beg that no further steps in this direction may be taken, without a full and fair trial of Surgeon-General Hammond upon the charges alleged to have been secretly made against him.

December 29, 1863.

Signed { H. W. Bellows,
Wm. H. Van Buren,
Wolcott Gibbs,
Geo. T. Strong,
C. R. Agnew,

Standing Committee U. S. Sanitary Commission.

We copy the above very singular document from one of our exchanges. It is singular or remarkable in several particulars. First, on account of the *assumed* dignity, importance, and representative character of those whose names are signed to it. For they not only "*claim to be* better acquainted with the working of the Medical Department of the Army" than any one else, but, also, to be the representatives of "some millions of constituents," together with the "*science* of the country and the *humanity* of its homes."

Second, on account of the assumption that all the improve-

ments and progress made in the Medical Department of the United States army are due "to the fact that for two years the Medical Department has been directed by Dr. W. A. Hammond, Surgeon-General." According to this body of men, representing "some millions of constituents," &c., all the hard-working, self-denying members of the medical staff of the United States army have been but simple clay in the hands of the "thoroughly scientific, highly endowed, large-minded, and energetic" Surgeon-General. And so destitute is the whole Staff of both brains and science, that not a man in it could be found qualified to fill the position of Surgeon-General, and consequently the removal of Dr. Hammond "would be as serious a blow at the lives, comfort, and efficiency of the army as the enemy itself could inflict." Alas! what if the Surgeon-General should die!

Third, it is most remarkable of all, on account of the demand for a court to try Dr. Hammond, after they, in their character as "*experts*," have fully pre-judged his case, by declaring that "his administration has *more* than justified all the high hopes and expectations of those who recommended him for the place."

Now, we are heartily tired and nauseated with such arrogant bombast and pretension as is put forth in the above document. We do not know what charges have been preferred against Dr. Hammond, as Surgeon-General; and we sincerely hope that they will be fairly and fully investigated, and for the credit of the profession to which he belongs, that they will be wholly disproved. But we certainly have no idea that all the science, the humanity, and the energy of the Medical Department of the Army is centered in him; or that his removal would endanger the dissolution of the Army. On the contrary, we believe the Medical Staff of the army contains a score of men, any one of whom are quite as competent to fill the office of Surgeon-General as is Dr. W. A. Hammond.

If Dr. Hammond is a man of such remarkable endowments, and peculiar fitness for the post of Surgeon-General, we would respectfully ask the above committee of "experts" why it is that after two years of his administration there is not yet an

efficient ambulance system for attending properly to the wounded in battle; and why the thousands of sick and wounded in all departments of the army are still pensioners on the *charity* of the nation, instead of having all their legitimate wants supplied promptly through the regular and responsible officers of the Medical and Commissary Departments? Is it any credit to the Government, or proof of efficiency on the part of the Secretary of War and Surgeon-General, to have the army so managed that no less than $7,000,000 or $8,000,000 of gratuitous and charitable donations have been required from the people to keep the sick and wounded soldiers from unnecessary suffering? Finally, is it the proper business of a *Sanitary Commission* to dispense *charity*, or to investigate and expose those causes that injure the health of the army, and the most reliable means for avoiding them?

THE MEDICAL STAFF OF ENGLAND.—From the last census it appears that there are, in England and Wales, one surgeon or general practitioner to about 1,712 of the population, one physician to 5,552, and one dentist to 3,505.

ON THE VALUE OF TINCTURE OF IODINE AS A TEST FOR DIABETIC URINE.

(*To the Editor of The Lancet.*)

SIR:—Having a case of diabetes mellitus under my care, and wishing to ascertain the value of the recently discovered test of Trousseau and Dumontpallier, I performed the following experiment:—

Equal quantities of healthy and diabetic urine were placed in two test-tubes (sugar having been ascertained to be absent from the former specimen). I then added to each fifteen drops of tincture of iodine. The effect was to tinge the healthy urine of a rose color, which it retained; while in the diabetic specimen all trace of color was promptly removed, showing the presence of glucose.

The test is very convenient, as well as very striking to the eye when compared with a healthy specimen. It is also very delicate, as I found by diluting the urine with water until I reached a specific gravity of less than 1001. In the latter experiment all color was removed, but it took a longer time.

The presence of rhubarb has appeared to me to interfere with Luton's test (bichromate of potash and sulphuric acid); but it produces no such effect upon the iodine test.

Should the value of this test be further confirmed, it will be found more ready and convenient than any of the means hitherto employed for the detection of sugar in the urine.

I am, Sir, your obedient servant,

H. D. Massy, Staff Assist.-Surg.

LETTER FROM NEW YORK.

THE NEW (OR OLD) ANÆSTHETIC.

Editor Medical and Surgical Reporter:

Sir:—Being informed that you take an interest in the question as to whom the honor belongs of having discovered and made practical anæsthesia, I ask leave to bring to your notice some facts within my own knowledge, which would seem to conclude the whole matter.

No one, I think, who has taken pains to examine the evidence on the subject, can doubt that the honor of the discovery belongs to the late Dr. Horace Wells, of Hartford, Connecticut. He made his discovery at one of my "exhibitions" of the "nitrous oxide gas," in the city of Hartford, on the evening of the 10th of December, 1844, and the next day he brought that discovery to the test of an experiment on himself. I, at his request, administered to him the gas, and Dr. Biggs, a dentist, extracted one of his large molar teeth without the slightest pain. The success of the operation surprised us all. This was, no doubt, the first successful trial of an adequate anæsthetic agent, and led to all that has since followed in this beneficent line of effort.

He attempted to establish the truth and value of his discovery in Boston, soon after, calling on Dr. Jackson, Dr. Morton and many Dentists of that city. These facts are established by an elaborate and unanimous report on the question "who discovered anæsthesia," made to the New York Legislature at the session of 1860, by the Medical Society of that State. This report contains an exhaustive consideration of the claims of Wells, Jackson and Morton, arriving at the conclusion that to Wells alone belongs the honor of the discovery. The facts are also established by many depositions, gathered and published in a volume on "anæsthesia," prepared by the Hon. Truman Smith. By these depositions Mr. Smith shows that Dr. Wells was in the constant and successful use of the nitrous oxide gas as an anæsthetic, in the city of Hartford, during nearly the

whole of 1845. He occasionally used ether, but preferred the nitrous oxide for a brief operation, like the extraction of teeth. During this time the subject of anæsthesia had not obtained any hold on the public mind, except in the city of Hartford. The discoverer encountered almost insuperable incredulity. It could not be believed that *any* substance could be breathed so as to destroy pain in surgical operations! Surgeons and the medical profession treated the subject as chimerical. It is no wonder that Dr. Wells, (a dentist,) made very slow progress in the introduction of his new discovery.

In December, 1845, Dr. Wells went to Europe to bring out his new invention, during his absence Drs. Jackson and Morton commenced a series of experiments with ether, to determine what there was in this discovery; their experiments proved successful; their next step was to secure a patent, which they applied for in the month of *November*, 1846, nearly two years after Wells made and demonstrated his discovery. Before it was issued, Jackson assigned his interest in the patent to Morton, therefore the patent was issued in the name of Morton. This, be it remembered, was all done in the absence of Wells. On the return of Wells to this country a discussion commenced between him and Morton as to the origin of the discovery, during which Wells died, leaving a widow in indigent circumstances with no means to prosecute the matter, consequently Morton had the field clear to tell his own story. By the disinterested and unpaid labors of the Hon. Truman Smith the testimony was gathered which establishes beyond cavil the truth of the above statements.

At the time of the death of Wells, very few people, aside from eye-witnesses, had any faith in either nitrous oxide or ether as an anæsthetic. After this event the nitrous oxide was superceded by the use of ether, so far as any anæsthetic was used. Ether could be purchased at any drug store, while it required expensive apparatus and some chemical knowledge to make the nitrous oxide, so that for twenty years past the nitrous oxide has hardly been thought of as an anæsthetic, till I revived it in May last, in New Haven, Connecticut. I there announced that I believed the nitrous oxide was a safe and efficient anæsthetic for the extraction of teeth, and on account of its harmlessness, was far superior to ether or chloroform. I arranged with Dr. Smith to extract teeth by this new (or old) anæsthetic, and in the space of three weeks and two days we extracted *over eight thousand teeth*, and without any pain to the patients. I then came to New York and established the "Colton Dental Associ-

ation," and have administered the gas, up to the present time, for the extraction of about eight thousand teeth. We find it works with far more certainty and uniformity than ether or chloroform, for we have never yet found a patient whom we could not put into a profound sleep. In no instance has any injurious effect attended the operation. We have given it to persons suffering from almost all sorts of disease, nervous debility and weakness, and heart disease, including many cases of far gone consumption, with no ill effects. In no instance have patients complained of pain. In a very few cases, where a large number of teeth have been extracted at a sitting, and several doses had to be given, a little blood would be swallowed and nausea would result. With these rare exceptions, not the slightest unpleasant effects have followed.

We have never had a patient who had previously taken ether or chloroform that did not warmly express his preference for nitrous oxide. Hundreds of dentists, who were, at first, skeptical about the nitrous oxide *on seeing its operation*, have given it their warmest commendation, and I do not now know of *one* in New York, who does not prefer it to ether or chloroform. The opinion on this subject, so far as I have been able to learn, is universal, and a large number send us their patients requiring the extraction of teeth.

I think these facts ought to satisfy the medical, also the profession and public, that for a brief surgical operation, the nitrous oxide gas is the best anæsthetic known. I have no doubt that if desired, I could keep the patient in an anæsthetic state for fifteen minutes or more. Instead of producing anæsthesia by depressing the vital forces, and diminishing the circulation of the blood in fact, approaching the point of death, the gas produces anæsthesia from the very opposite cause, from *over exhilaration*, and from an increased and more highly oxygenized condition of the blood. A small dose of nitrous oxide or ether or chloroform will exhilirate, a larger induces sleep. But ether and chloroform act directly on the nerves, and as a *stimulant*. A consequent reaction and depression follows. The nitrous oxide is not a stimulant, and does not act directly on the nerves at all. The gas is taken into the lungs and is rapidly absorbed by the blood, producing a highly oxygenized condition of that fluid. This highly purified blood acts as an *exhilarant* on the nerves. (There is a wide difference between an exhilarant and a stimulant.) The anæsthetia is produced by *over exhilaration*. There is no reaction or depression following its inhalation. When I say this, I but reiterate what all work-

on chemistry state. I speak also from an experience of twenty years with the gas.

I call nitrous oxide the new anæsthetic, because I have after a long interval, revived the use of it. But it is in fact the old anæsthetic of Horace Wells, and I rejoice that Providence has permitted me to live and demonstrate the truth and validity of his great discovery. Surgeons, physicians, and dentists from any part of the country who may desire to verify the truth of the above representations, are invited to call and witness the operations at the rooms of the Colton Dental Association, 22 Bond street, New York.

Respectfully, G. Q. Colton.

Chicago Medical Journal.—We see by the January number of this monthly, that it has again changed hands.

Professors Brainard and Allen, its former editors and proprietors, have transferred it to Professors Miller and Ingalls, of the same faculty. We congratulate its readers on this change, for if its future editorial articles should be less facetious and spicy, they will doubtless be more truthful. We welcome the new editors as co-laborers in the field of medical journalism.

GLYCERINE.

This may appear at first sight an almost exhausted subject; but the uses of glycerine in medicine and surgery are so numerous that there are still many points worthy of notice.

The therapeutic uses of glycerine may be said to have begun with its employment in cases of deafness by Mr. Thos. Wakley, in 1849. Mr. Startin had, we believe, used it to some extent previously in skin diseases; but its value in aural surgery led directly to the recognition of its peculiar properties, and their adaptation to many practical requirements. It happened, fortunately, that shortly after the publication of Mr. Wakley's work a method was discovered of preparing glycerine perfectly pure. The whole range of pharmacy supplies no more striking illustration of the supreme importance of absolute purity in our remedial agents. So long as we were unable to obtain a pure glycerine, it was impossible to ascertain its real merits as a remedy. This desideratum was supplied by the industry and scientific skill of Mr. G. F. Wilson, the well known manager of Price's Candle Company. That manufactory, in his hands, has

in a most remarkable manner demonstrated that scientific discoveries which at first sight appear quite useless or remote from any practical application may become of the greatest value in the common affairs of life. When chemists read with admiration the researches of Chevreul on fatty bodies, about forty years ago, they could scarcely have dreamed of the results to commerce and medicine which would flow from them. We doubt, indeed, whether even yet physiologists have duly appreciated them and their bearings on the function of fat in the living economy. When Mr. Wilson directed his attention to glycerine as a product of the operations on fats in candle making, it was a useless waste material, and hundreds of tons were thrown away annually. At that time we could only employ an impure fluid scarcely affording a glimpse of its real properties. The early attempts to employ glycerine gave rise to contradictory and conflicting opinions. This arose simply from the various matters attaching to it, from its mode of preparation, and the sources whence it was derived. It had a disagreeable odor from the presence of volatile fatty acids, and often contained lime, lead, and other metals, or metallic salts, sulphuric acid, hydrochloric acid, and alkaline or earthy salts. No wonder that it was found to irritate inflamed surfaces and to aggravate painful states—effects directly opposite to those of pure glycerine. As it is said there is still impure and adulterated glycerine in the shops, it is of primary importance to recognise the pure.

Glycerine should be absolutely without smell or color, with a saccharine taste, and of the consistence of syrup. Its chemical formula is $C^6 H^7 O^5$, H O. With a specific gravity, at 60° F., of 1.24, it contains 94 per cent. of anhydrous glycerine. It can be concentrated to 1.26, when it contains 98 per cent. It is soluble in all proportions in water and alcohol, but insoluble in ether. It should show no reaction with litmus paper, and yield no precipitate with any reagent. Such is the glycerine prepared by Mr. Wilson, and known as Price's. Its source is palm oil, from which it is prepared by distillation in steam at a temperature of from 550° to 600° F. It is a curious fact, that although thus separated from its natural combination with fixed fatty acids, it will not again combine with them. Attempts to form preparations by combining glycerine with solid fats or oils are false in principle. Its combination with starch in various proportions, as described by Dr. Tilt, is the form in which it is best adapted for use; and it appears probable that this will in a great measure supersede all other ointments, whilst its solvent

power renders it a most suitable vehicle for substances designed to be used with some friction on the surface as liniments and embrocations.

Unlike oils and fat, it does not absorb oxygen, and therefore never becomes rancid, or decomposes substances dissolved in it. It is probably mainly by virtue of this property that it acts as an antiseptic. Applied alone, it soothes the irritation of most skin diseases, and allays the pain of inflamed parts. With the exception of the formula for the use of starch to render it semi-solid, as given by Dr. Tilt, we see no advantage in copying the various formulæ which have been published. Every one can describe the remedy he selects according to its known properties, if the quantity soluble in the glycerine is known. Hence, we conceive the following tables will be found very useful:—

A. *Inorganic substances.*

100 parts of pure glycerine dissolve—

Sulphur	0-1	Cyanide of mercury	27-0
Phosphorus	0-2	Arsenic acid	20-0
Iodine	1-0	Arsenious acid	20-0
Bromine	(all proportions)	Boracic acid	10-0
Monosulphuret of potassium	(all proportions)	Chlorate of potash	3-5
" of sodium "		Arseniate of "	50-0
" of lime "		" of soda	50-0
Persulphuret of potassium	25-0	Carbonate of "	98-0
Iodide of sulphur	1-6	Bicarbonate of "	8-0
" potassium	40-0	Borate	60-0
" zinc	40-0	Carbonate of ammonia	20-0
Biniodide of mercury	0-3	Hydrochlorate of "	20-0
Bromide of potassium	25-0	Alum	40-0
Iodide of iron	(all proportions)	Sulphate of iron	25-0
Chloride of sodium	20-0	" zinc	35-0
" barium	10-0	" copper	30-0
" zinc	50-0	Nitrate of silver	(all proportions)
" iron	(all proportions)	Tannic acid	50-0
Bichloride of mercury	7-5	Oxalic acid	15-0
Cyanide of potassium	32-0	Benzonic acid	10-0

With the sulphuric, nitric, phosphoric, hydrochloric, acetic, citric, and tartaric acids, glycerine unites in all proportions; and the same with the caustic alkalies and some salts, as the hypochlorites of soda and potass. Most of the metallic salts soluble in water are to about the same degree soluble in glyce-

rine; some, however, are decomposed, as the bichromate and permanganate of potass.

B. *Organic substances, alkaloids, &c.*

100 parts of glycerine dissolve—

Morphia	0-45	Quinine	0-5
Muriate of morphia	20-0	Sulphate of quinine	2-75
Atropine	3-0	Cinchonine	1-5
Sulphate of atropine	33-0	Veratrine	1-0
Strychnine	0-25	Brucine	2-25
Sulphate of strychnine	22-5	Codeine	(all proportions)
Nitrate of strychnine	4-0		

Watery extractions of vegetables are very soluble in glycerine; whilst gums, resins, essential oils, ethereal extracts, camphor, balsams, fatty acids, are either wholly insoluble or sparingly soluble.

The internal uses of glycerine, either alone or in combination, or as a vehicle for active substances, await further investigation.

Notwithstanding that we are told the quantity of glycerine used in the hospitals of Paris increased from 300 pounds in 1851 to 3000 in 1861, we fear the demand for glycerine for therapeutic purposes will fall very far short of the amount produced as a residue in candle making, when this is reckoned at hundreds of tons per annum. That the demand for it will greatly increase as its value becomes recognised there is no doubt. If the price could be considerably reduced, the consumption would be much larger.

Hæmostasis.—At the last meeting of the British Association in Newcastle, a paper was read by Dr. Junod, so well known as the inventor and improver of an apparatus for the purpose of producing a vacuum over certain portions of the body. By this instrument, as is now well known, the power is afforded of withdrawing rapidly into a given part of the body from the general circulation from six to ten pounds of blood, and to maintain this important displacement as long as the case requires. Thus the most important effects of venesection may be produced without the debility consequent upon absolute abstraction of a large quanity of blood.

Test for Sulphur.—A solution of molybdate of ammonia in diluted hydrochloric acid, is stated by M. Schlossberger to be a most delicate test for the presence of sulphur.

CHICAGO MEDICAL COLLEGE.

Medical Department of Lind University.

The regular Annual Lecture Term in this Institution will commence on the second Monday in October, and continue until the first Tuesday in March following. Clinical Lectures *daily* throughout the term.

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FEES.

For the Winter Term, admitting to all the Lectures in the College,	$50.00
Graduation Fee,	20.00
Matriculation Fee,	5.00
Dissecting Ticket,	5.00
Hospital Ticket,	6.00

The Summer Reading and Clinical Term commences on the second Tuesday in March, and continues until the first Tuesday in July; and is free to all matriculated students of the College. Boarding can be had for $2.50 to $3.50 per week. For further information, inquire of

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